DNMI

DET NORSKE METEOROLOGISKE INSTITUTT

# klima

## HANØYTANGEN , OCTOBER 1994

Knut A. Iden

RAPPORT NR. 45/94 KLIMA

# DNMI-REPORT

**DET NORSKE METEOROLOGISKE INSTITUTT**
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ISBN

REPORT NO.
**45/94 KLIMA**

DATE: Nov.25
1994.

TITLE

**HANØYTANGEN , OCTOBER 1994**

PREPARED BY

Knut A. Iden

ORDERED BY

KVÆRNER CONCRETE CONSTRUCTION
CONTRACT NO: KCC/PAC004/001

SUMMARY

Monthly summary based on the meteorological data measured at the building site of Kværner at Hanøytangen, Askøy near Bergen.

SIGNATURE

Knut A. Iden
PROJ. RESPONSIBLE

Bjørn Aune
HEAD OF DIVISION

# MONTHLY REPORT OCT. 1994

PAC 004 WEATHER ANALYSIS IN HANØYTANGEN
REPORT 12 : November 25 1994

| | | |
|---|---|---|
| CLIENT | : | DNMI |
| CONTRACT NO. | : | KCC/PAC004/001 |
| PROJECT NO. | : | |
| DOCUMENT NAME | : | RAPPOCT.94 |
| PROJ. MANAGER | : | Knut A. Iden |
| EXECUTED BY | : | Bjørn. H. Halvorsen and Knut A. Iden |
| APPROVED BY | : | Bjørn Aune 25.11.1994 |
| COMPLETION DATE | : | NOV. 25 1994 |
| REV 1. | : | |

**HANØYTANGEN MET-DATA**

**Monthly Report**
**OCT. 1994**

DSU : serial no. 6602
Received : NOVEMBER 4 1994

**Comments regarding the data :**

The DSU serial no.66042 contains data for the period 05/10/94 to 04/11/94.
The DSU is read by the standard software (P3059) delivered from Aanderaa a/s. The calibration factors applied is provided by Aanderaa in a fax dated January 21 1994.

The processing is based on this data set and the following steps are conducted :

- A SAS data set of the data for OCTOBER is generated

  In this step 10 min mean wind speed > 35 m/s and gust wind speed > 40 m/s are replaced with missing values. The wind speed in 30 m is also compared to the wind speed measured 18 m above the ground. If deviation is 10 m/s above or 5 m/s below the wind speed measured in 18 m, the wind speed in 30 m is replaced by missing value. The reason for this handling is there seem to be some disturbances connected to the measurements in the top of the mast (30 m above the ground).
  The other meteorological parameters are checked to be inside reasonable intervals. The original data which is replaced due to the specified criterions are saved for an assessment. Appendix 2 gives a listing of these records.

- Plots of the time series are generated and examined.
- Un physical values (spikes) are eliminated.
- Final plots of the time series are generated.
  For wind speed and wind direction 10 min values are plotted. For the parameters air temperature (T), humidity (UU) and air pressure reduced to mean sea level (QFF), hourly means are plotted. The hourly mean for $11.00^h$ is defined by the measurements for $10.30^h$, $10.40^h$, $10.50^h$, $11.00^h$, $11.10^h$ and $11.20^h$.
- Distribution tables wind speed /direction are generated. 22.5° intervals are applied for the direction. N='348.76° - 11.25',NNE = '11.26 - 33.75' ...
- Wind roses are generated.
- Coefficient transfert tables are generated.
- Duration table are generated.
- Climatological summary table are updated.
- Preliminary estimates for 10/100 year values for the wind are computed.

Logging each 10 minute

## WIND

| Parameter | Height | Cover. | Unit | Mean | ST.D. | Max | Dir[1] | D.:Hour | Min | Dir[1] | D.:Hour |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wind speed | 30 m | 98.1 % | m/s | 5.0 | 2.8 | 14.7 | 337 | 15:1845 | 0.4 | 359 | 16:2345 |
| Wind speed | 18 m | 100.0 % | m/s | 4.8 | 2.9 | 14.1 | N/A | 15:1845 | 0.4 | N/A | 19:1245 |
| Wind speed | 10 m | 100.0 % | m/s | 4.7 | 2.9 | 13.8 | 217 | 15:0125 | 0.4 | 294 | 20:1535 |
| Wind gust | 30 m | 98.1 % | m/s | 6.7 | 3.6 | 18.9 | 337[2] | 15:1845 | 0.4 | 271[2] | 20:1535 |
| Wind gust | 18 m | 100.0 % | m/s | 6.6 | 3.7 | 18.6 | N/A | 15:0155 | 0.4 | N/A | 19:1315 |
| Wind gust | 10 m | 100.0 % | m/s | 6.5 | 3.7 | 18.9 | 297[2] | 04:0751 | 0.4 | 72[2] | 26:1239 |

## OTHER METEOROLOGICAL DATA

| Parameter | Height | Cover. | Unit | Mean | ST.D. | Max | D.:hour | Min | D.:hour |
|---|---|---|---|---|---|---|---|---|---|
| Air Temp. | 2. m[3] | 99.4 % | C | 7.5 | 3.3 | 14.8 | 23:1255 | 0.2 | 3:0601 |
| Rel. Hum. | 2. m[3] | 100.0 % | % | 74 | 12.3 | 90 | 01:0755 | 35 | 20:1355 |
| Air pr. | 0. m[3] | 99.4 % | hPa | 1011.0 | 13.1 | 1030.9 | 16:2245 | 983.1 | 31:2229 |

1 Direction is referenced to True North (accuracy +- 2°)

2 Direction of gust wind is not measured. The mean wind direction for the ten minute period when it has occured is applied.

3 Air temperature sensor and humidity sensor are placed in the mast 2 m above the reference point on the ground while the pressure sensor have the same height as the reference.

The reference point on the ground is located 15.64 m above the mean sea level (NGO).

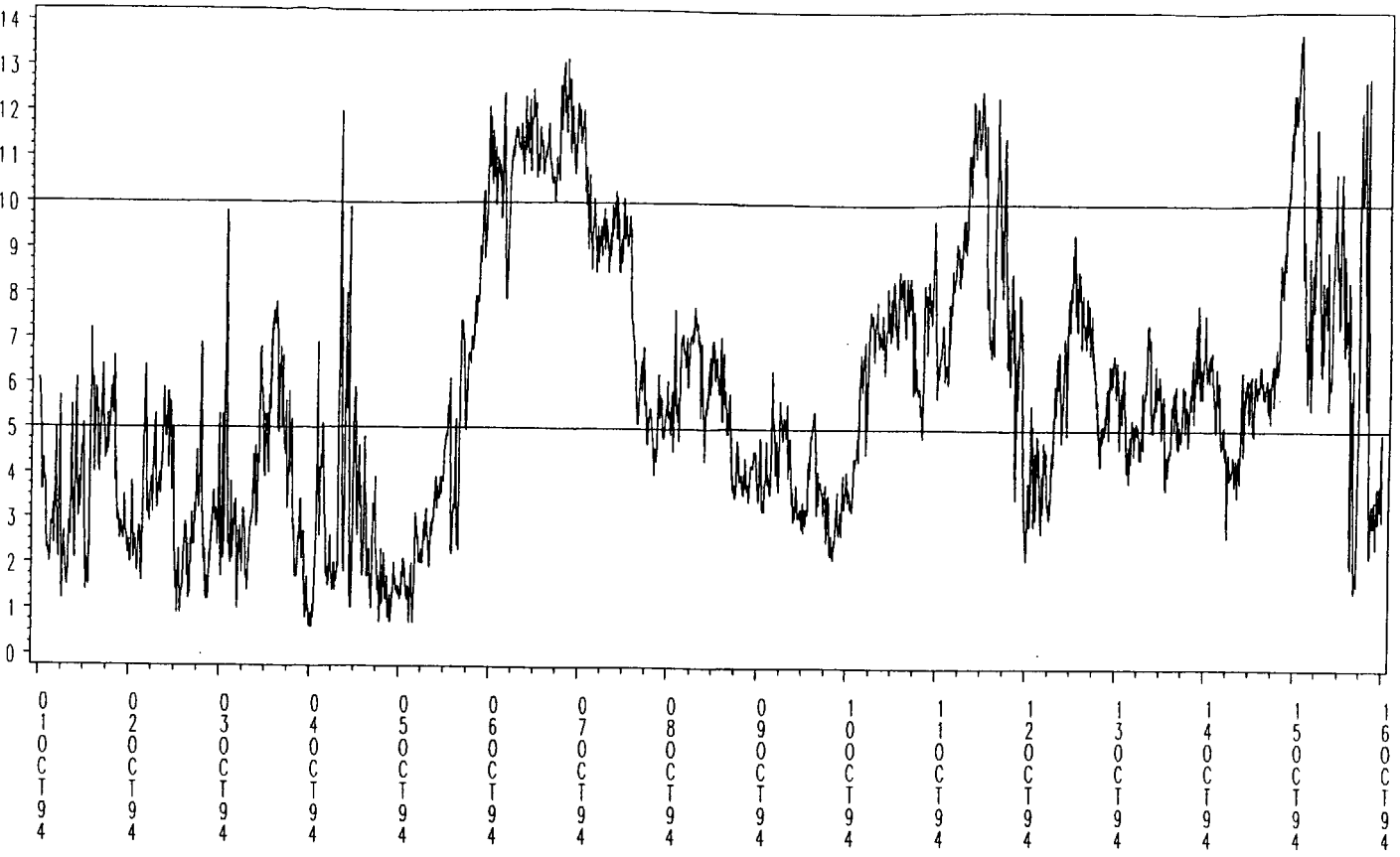
This month probable false heating has been traced in the temperature data on the 2, 12 and 14. Spikes has been removed on these days.

The minimum of the wind speed (0.4 m/s) has occurred several times this month. It is the first occurrence which is given in the table.

# PLOT OF TIME SERIES

# HANØYTANGEN 1994

Wind speed 10 m above the ground (m/s)

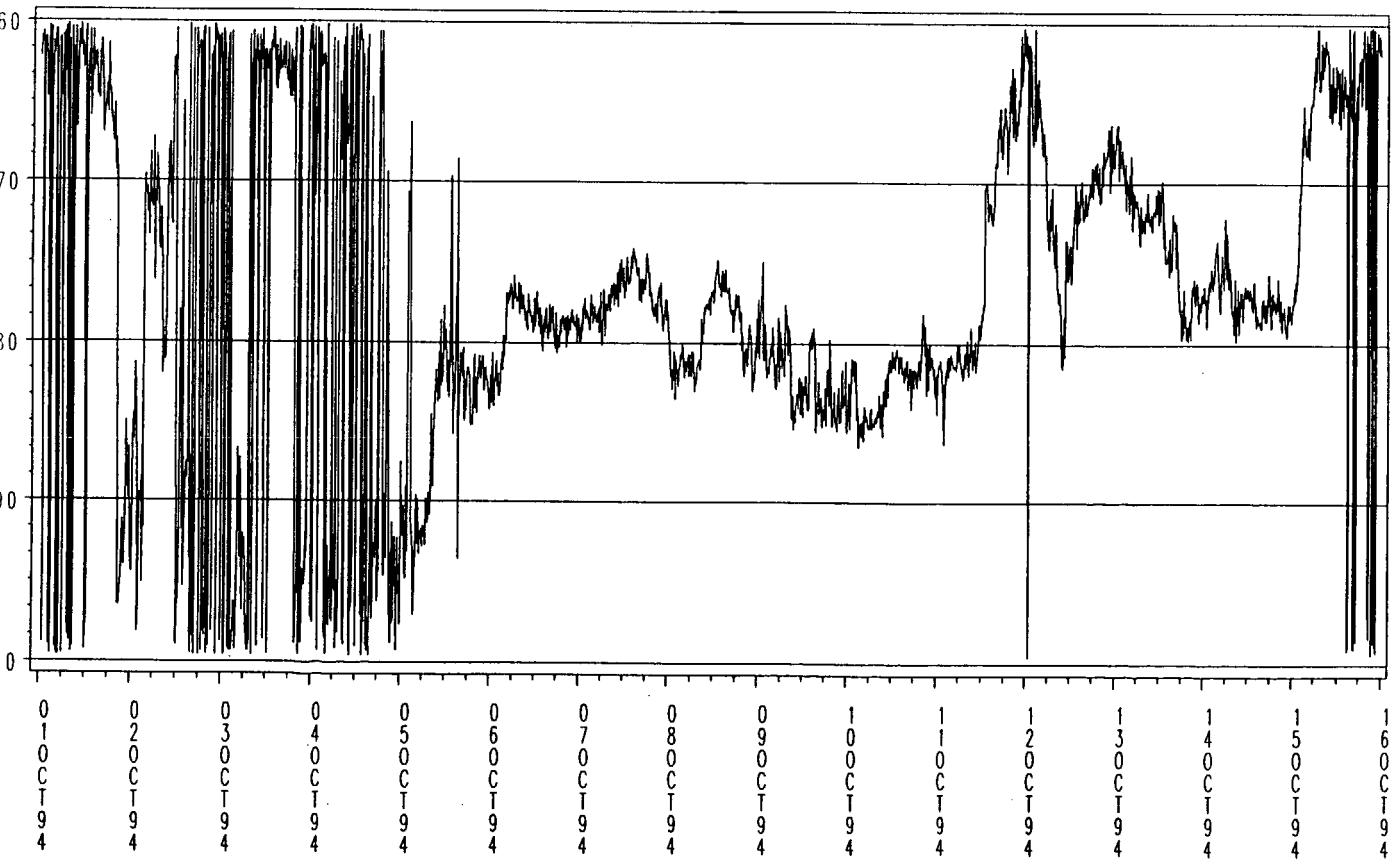



DAY

DNMI - KLIMAAVDELINGEN

# HANØYTANGEN 1994

Wind direction 10 m above the ground

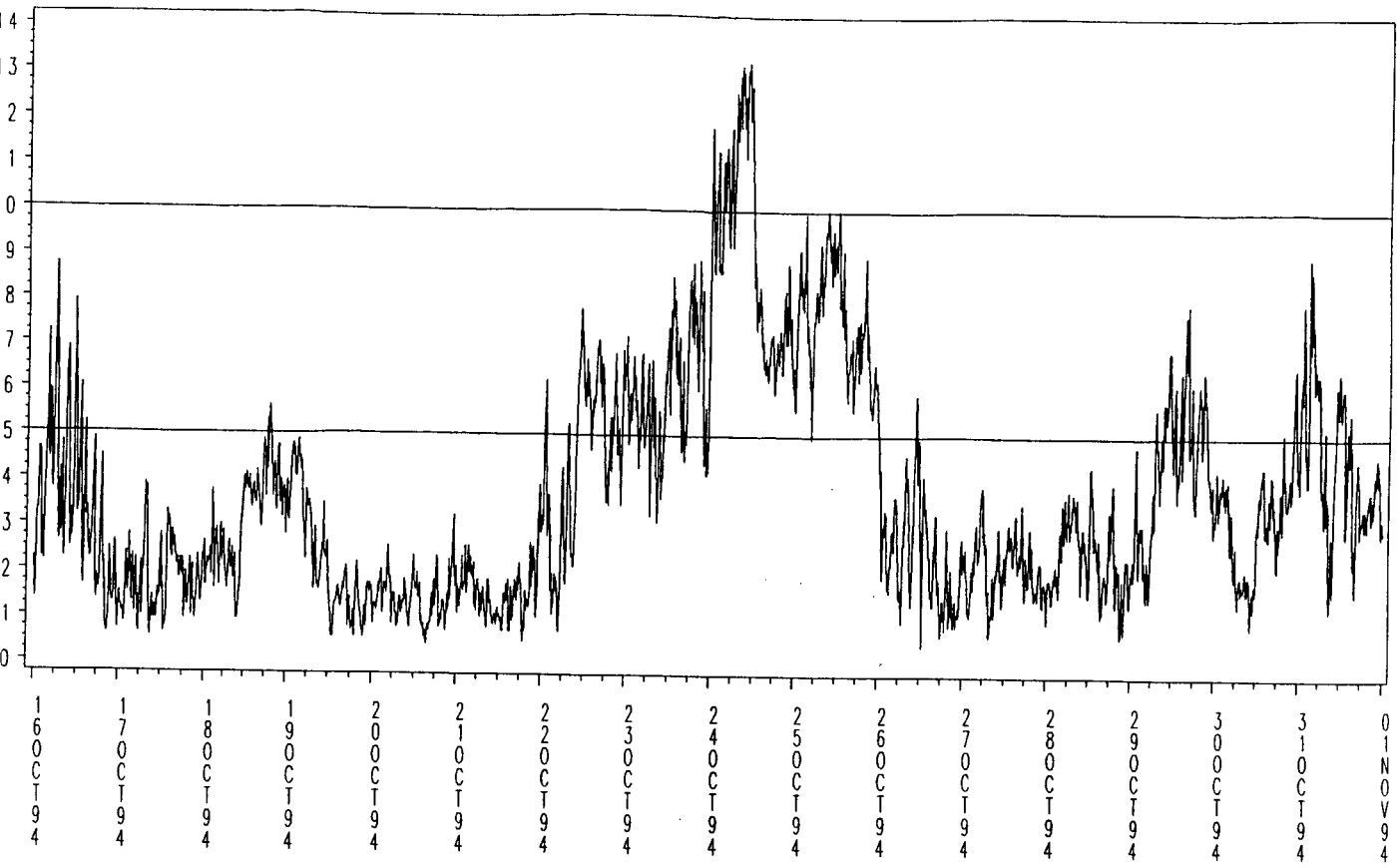



DAY

DNMI - KLIMAAVDELINGEN

# HANØYTANGEN 1994

Wind speed 10 m above the ground (m/s)

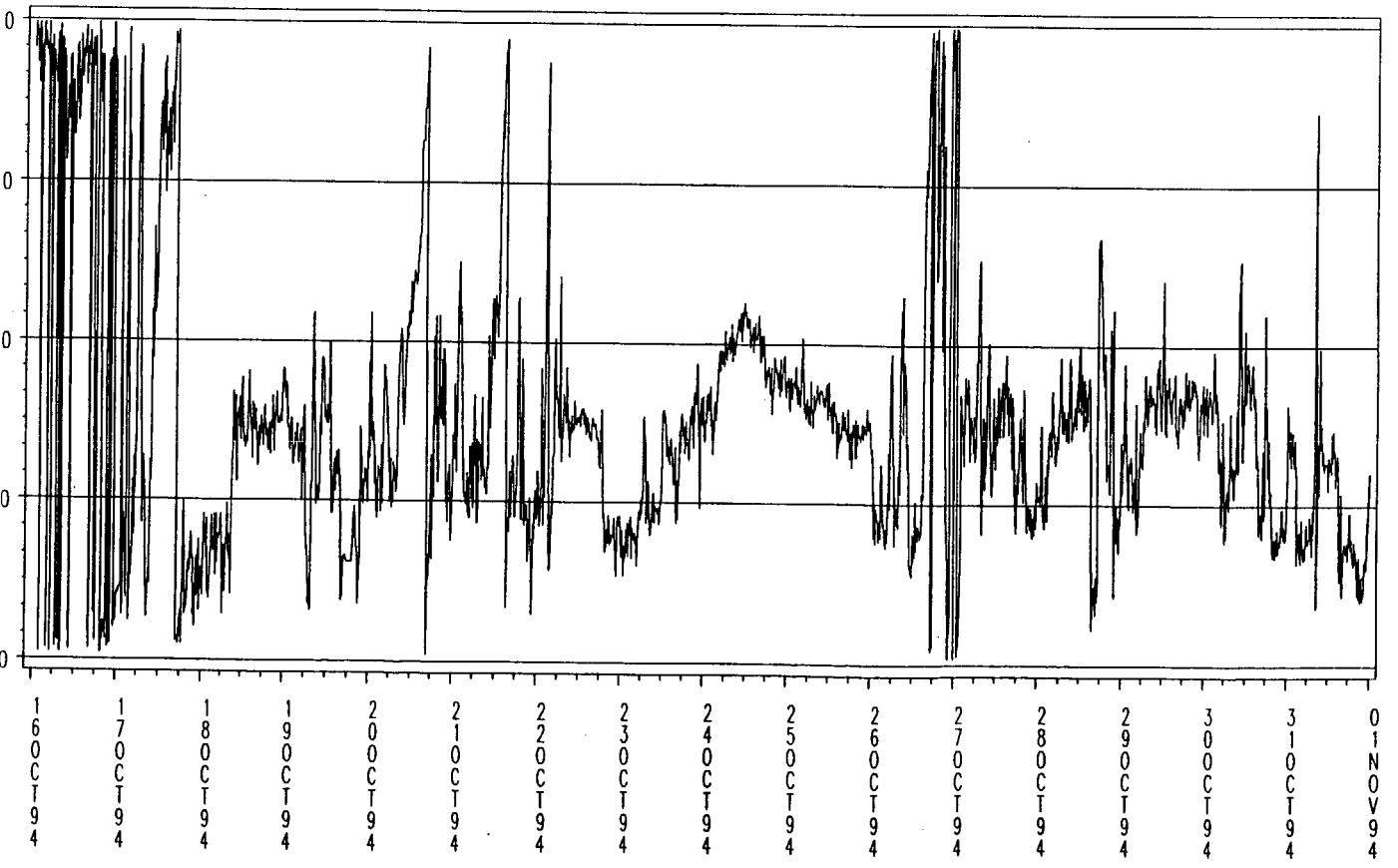



DAY

DNMI - KLIMAAVDELINGEN

# HANØYTANGEN 1994

Wind direction 10 m above the ground

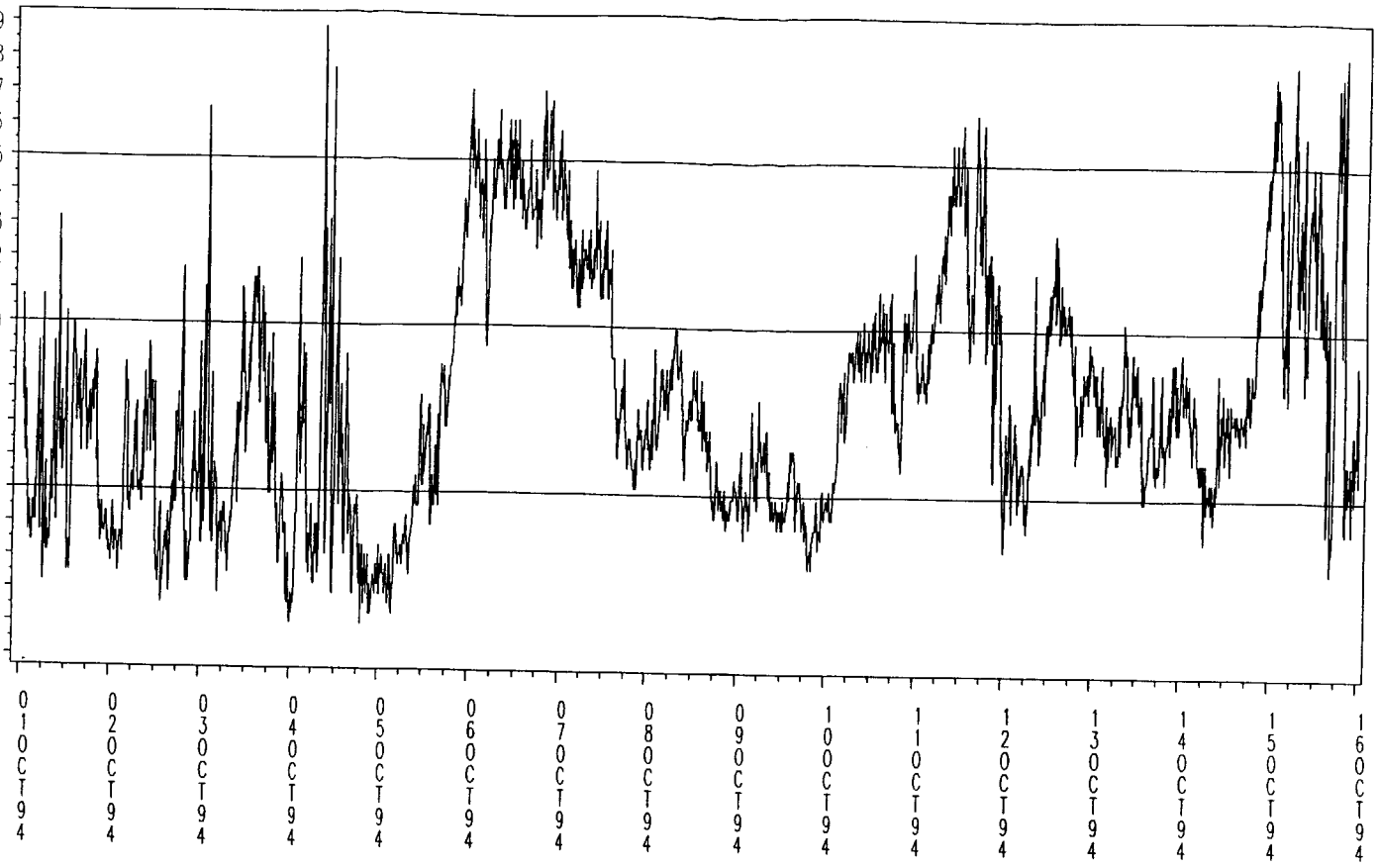



DAY

DNMI - KLIMAAVDELINGEN

# HANØYTANGEN 1994

Gust wind speed 10 m above the ground (m/s)

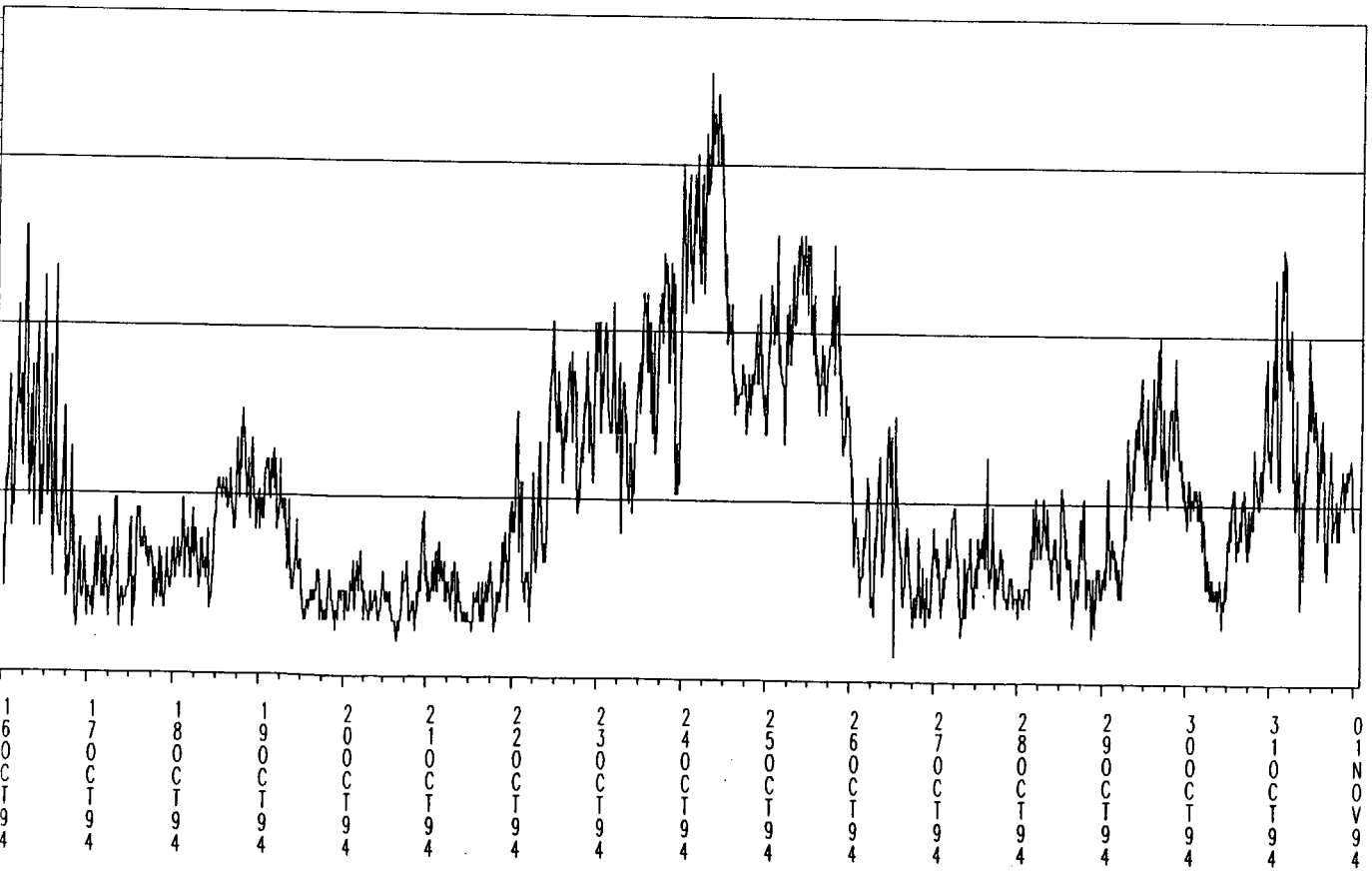



DAY

DNMI - KLIMAAVDELINGEN


# HANØYTANGEN 1994

Gust wind speed 10 m above the ground (m/s)

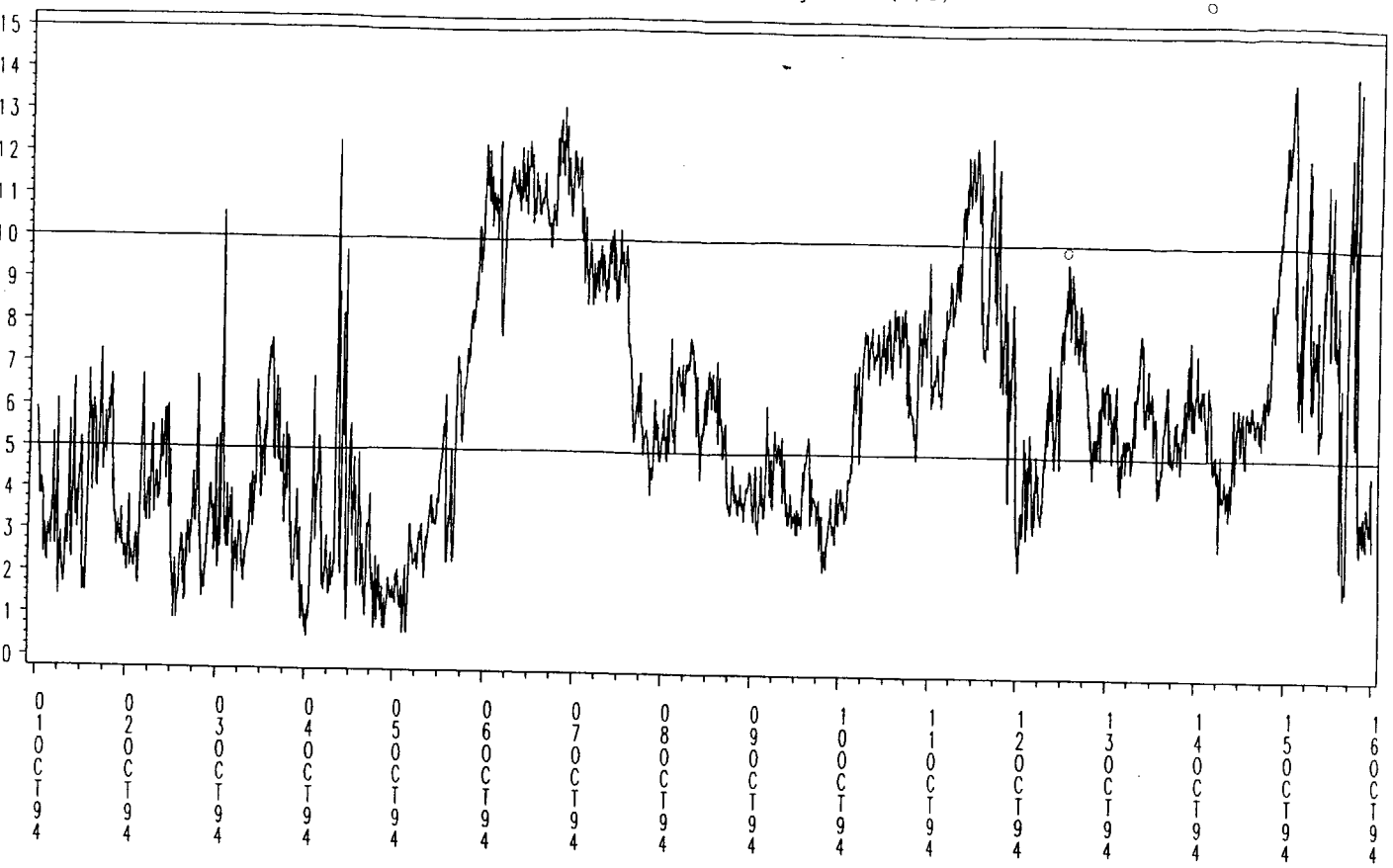


DAY

DNMI - KLIMAAVDELINGEN

# HANØYTANGEN 1994

Wind speed 18 m above the ground (m/s)

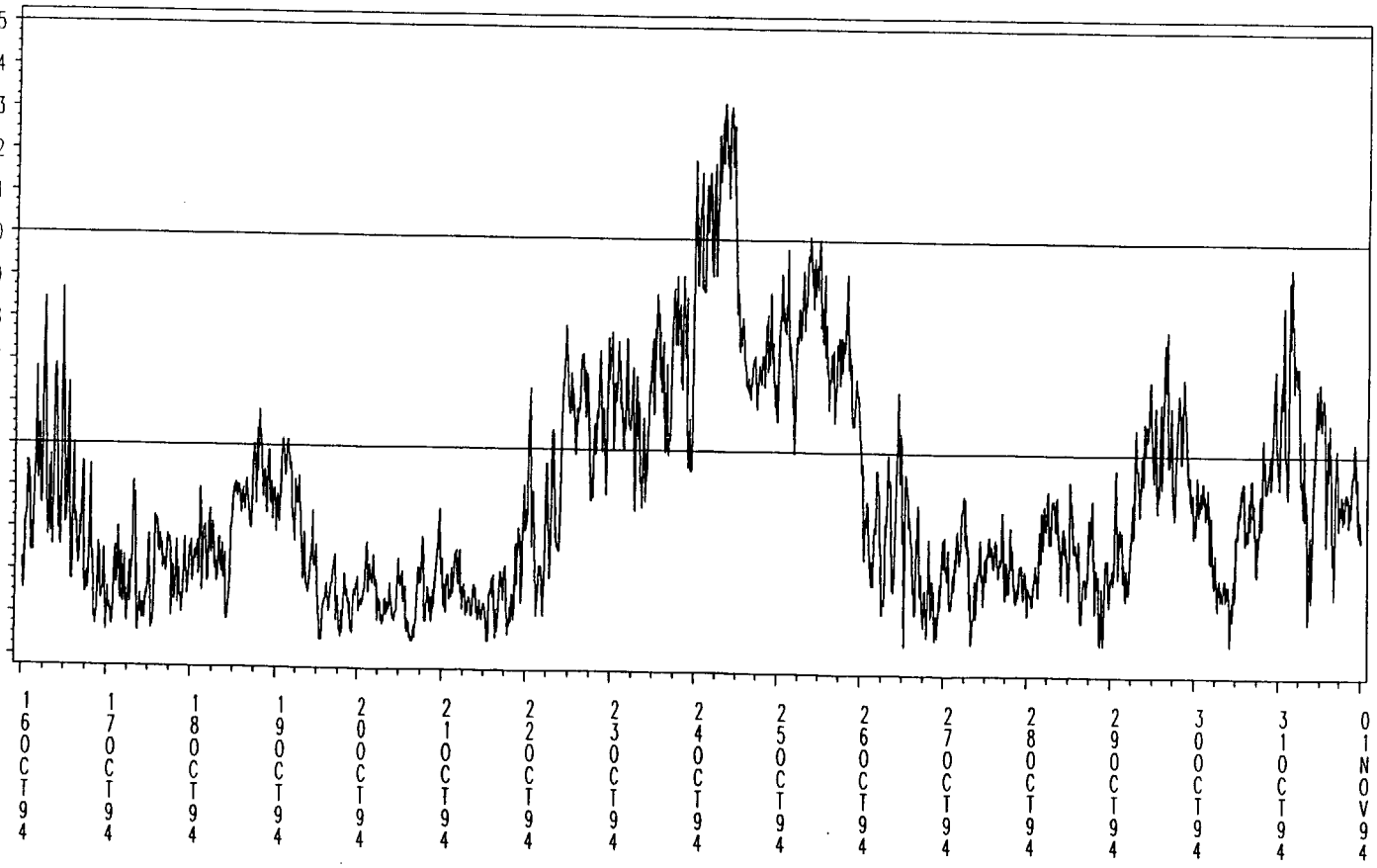



DAY

DNMI - KLIMAAVDELINGEN

# HANØYTANGEN 1994

Wind speed 18 m above the ground (m/s)

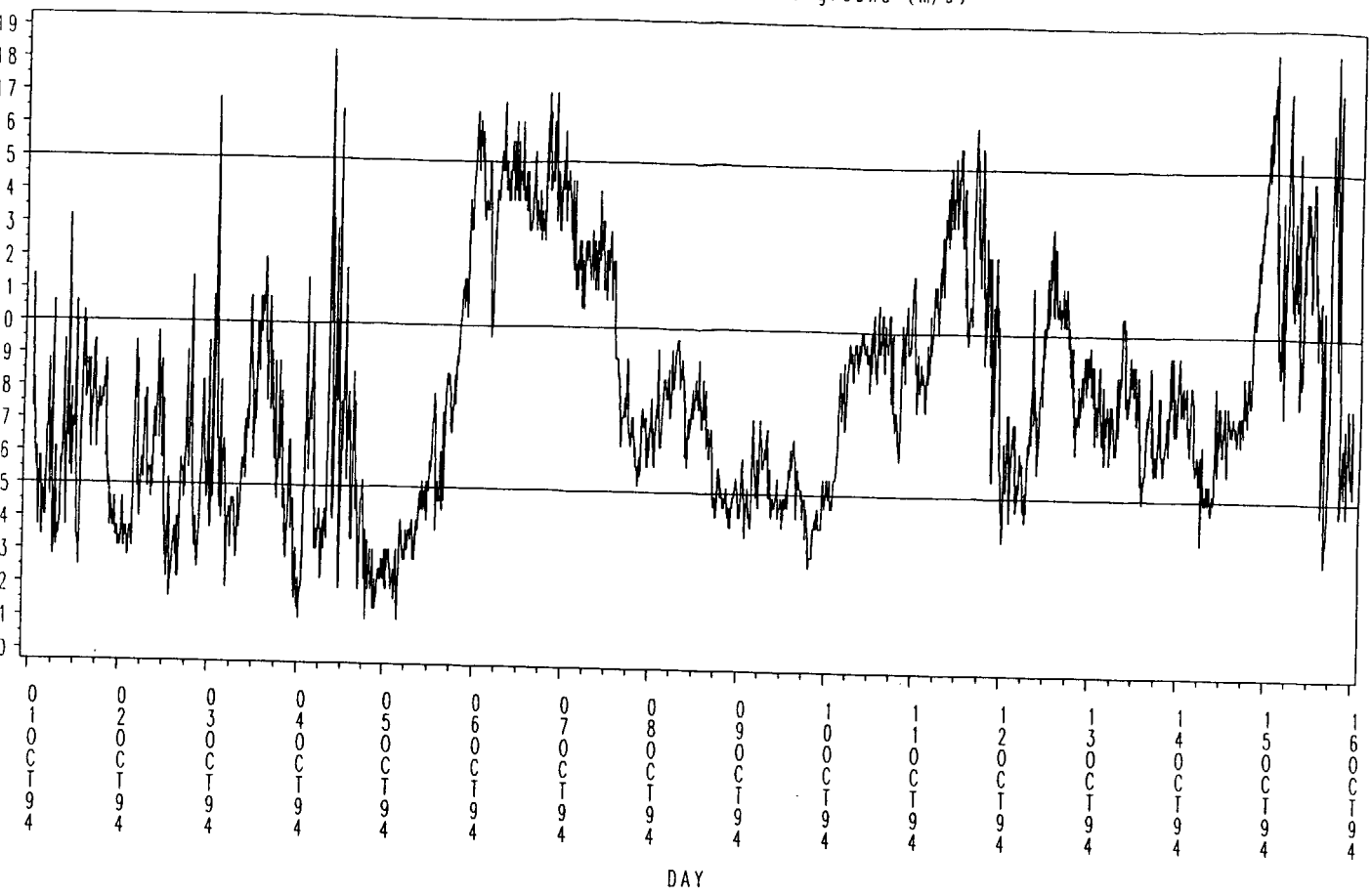



DAY

DNMI - KLIMAAVDELINGEN

# HANØYTANGEN 1994

Gust wind speed 18 m above the ground (m/s)

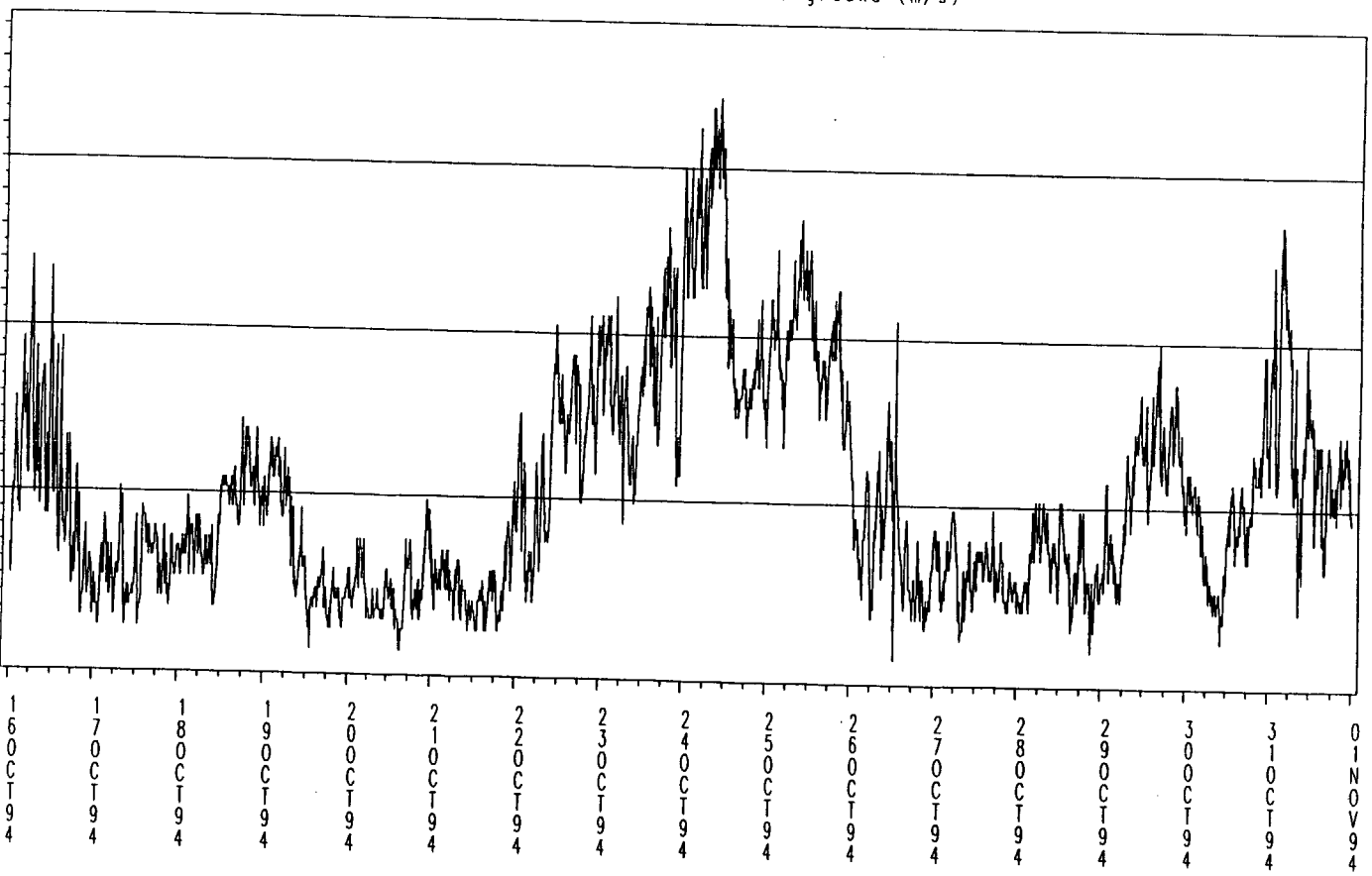



DAY

DNMI - KLIMAAVDELINGEN

# HANØYTANGEN 1994

Gust wind speed 18 m above the ground (m/s)

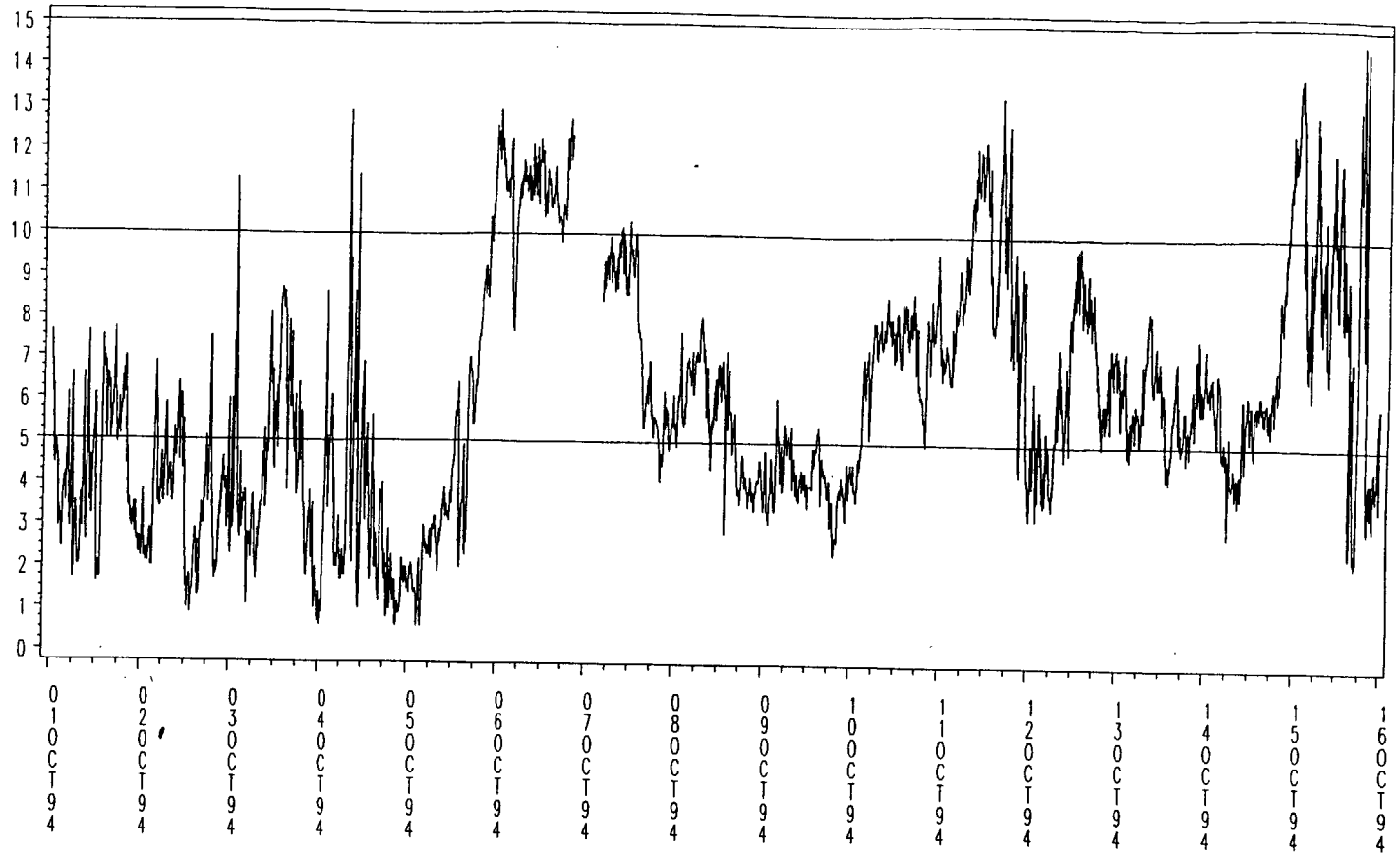



DAY

DNMI - KLIMAAVDELINGEN

# HANØYTANGEN 1994

Wind speed 30 m above the ground (m/s)

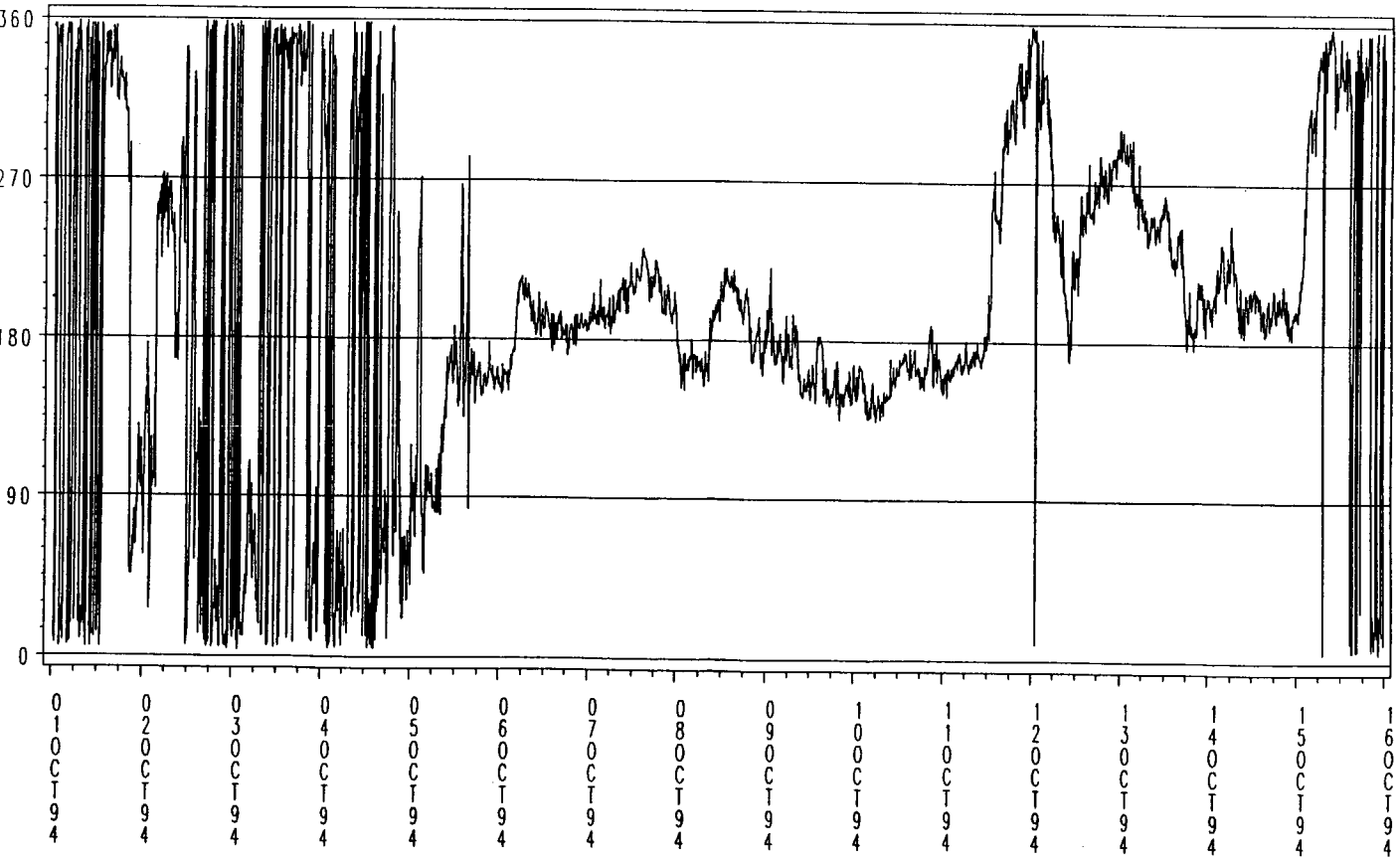



DAY

DNMI - KLIMAAVDELINGEN

# HANØYTANGEN 1994

Wind direction 30 m above the ground

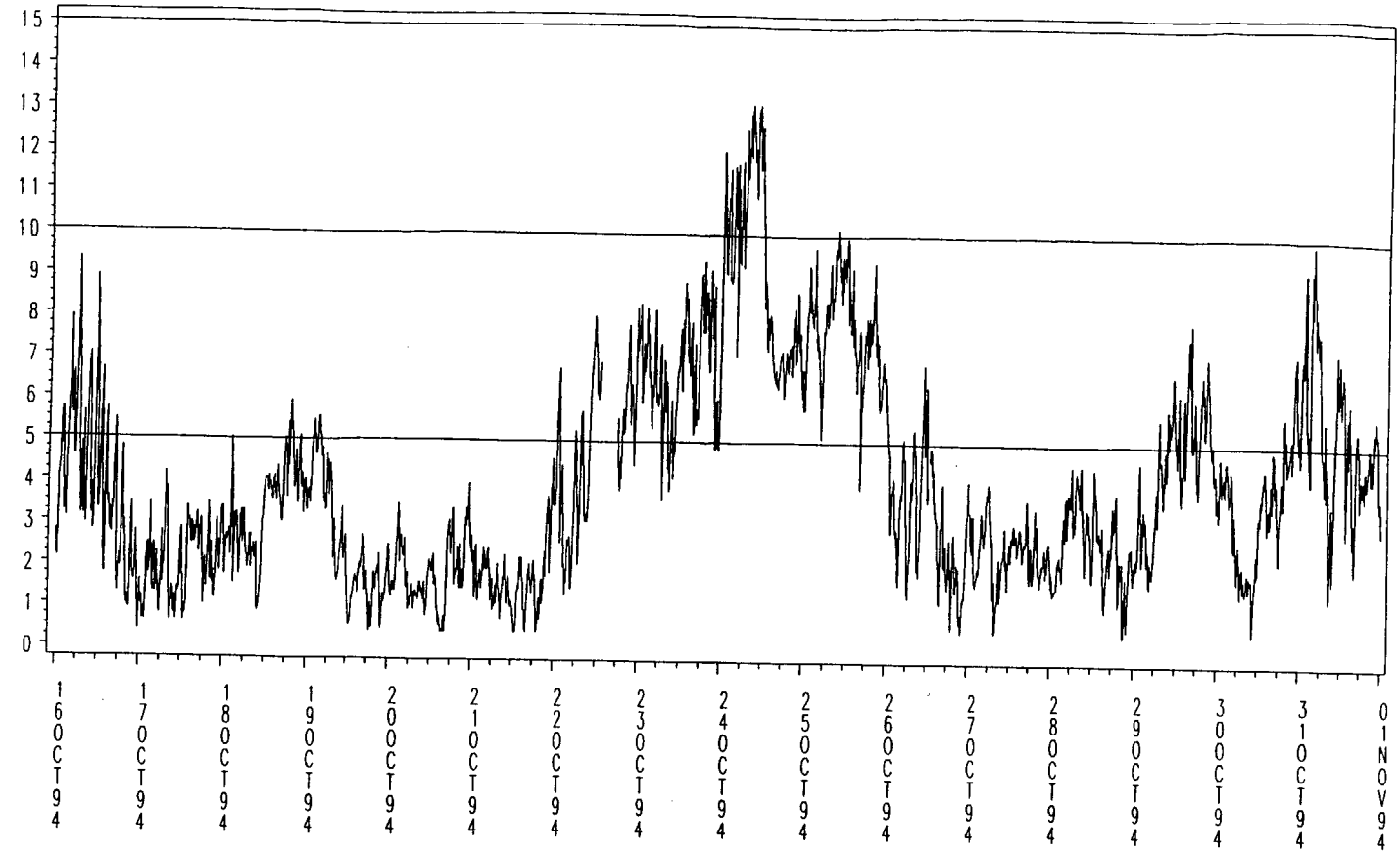



DAY

DNMI - KLIMAAVDELINGEN

# HANØYTANGEN 1994

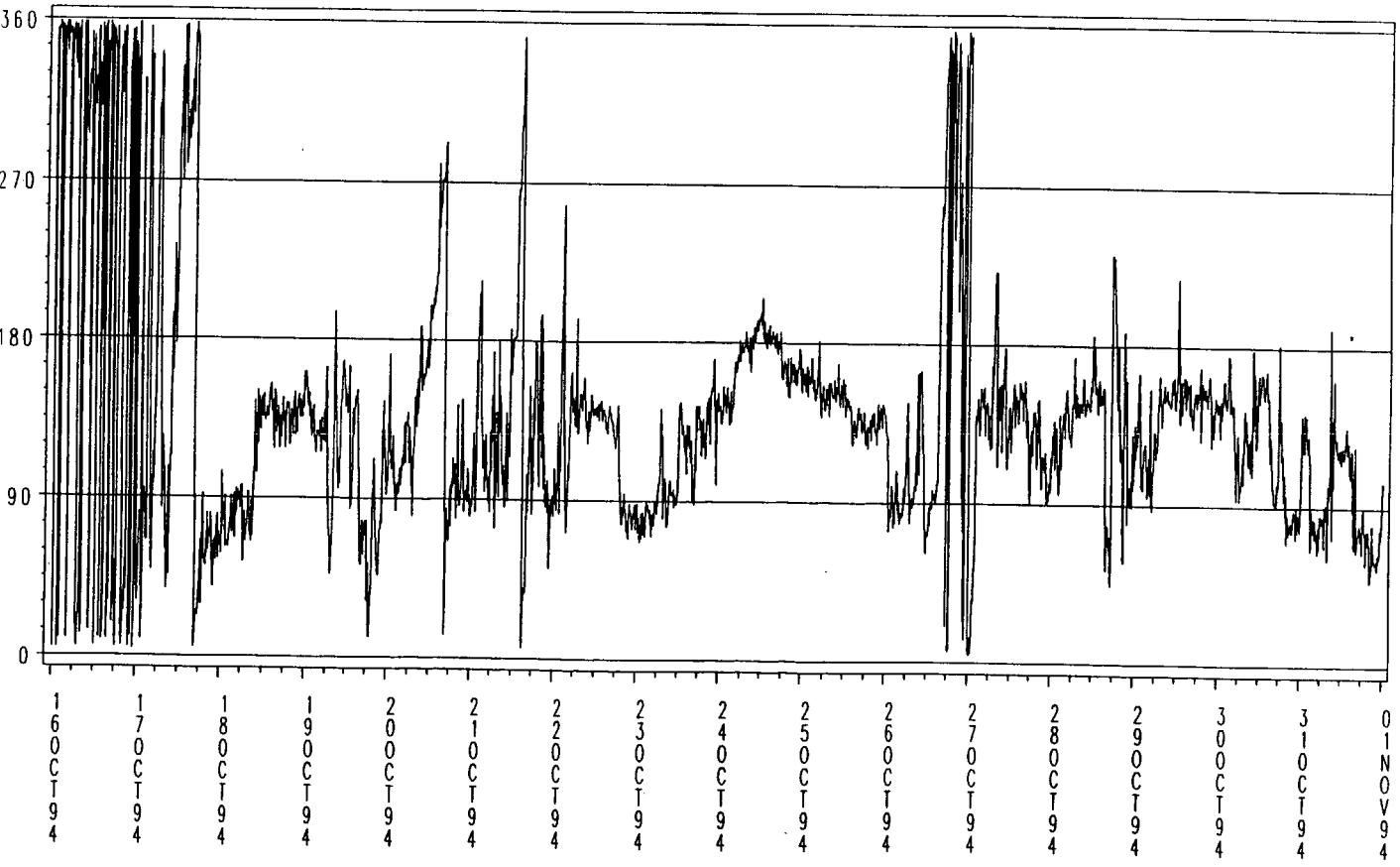
Wind speed 30 m above the ground (m/s)




DNMI - KLIMAAVDELINGEN

# HANØYTANGEN 1994

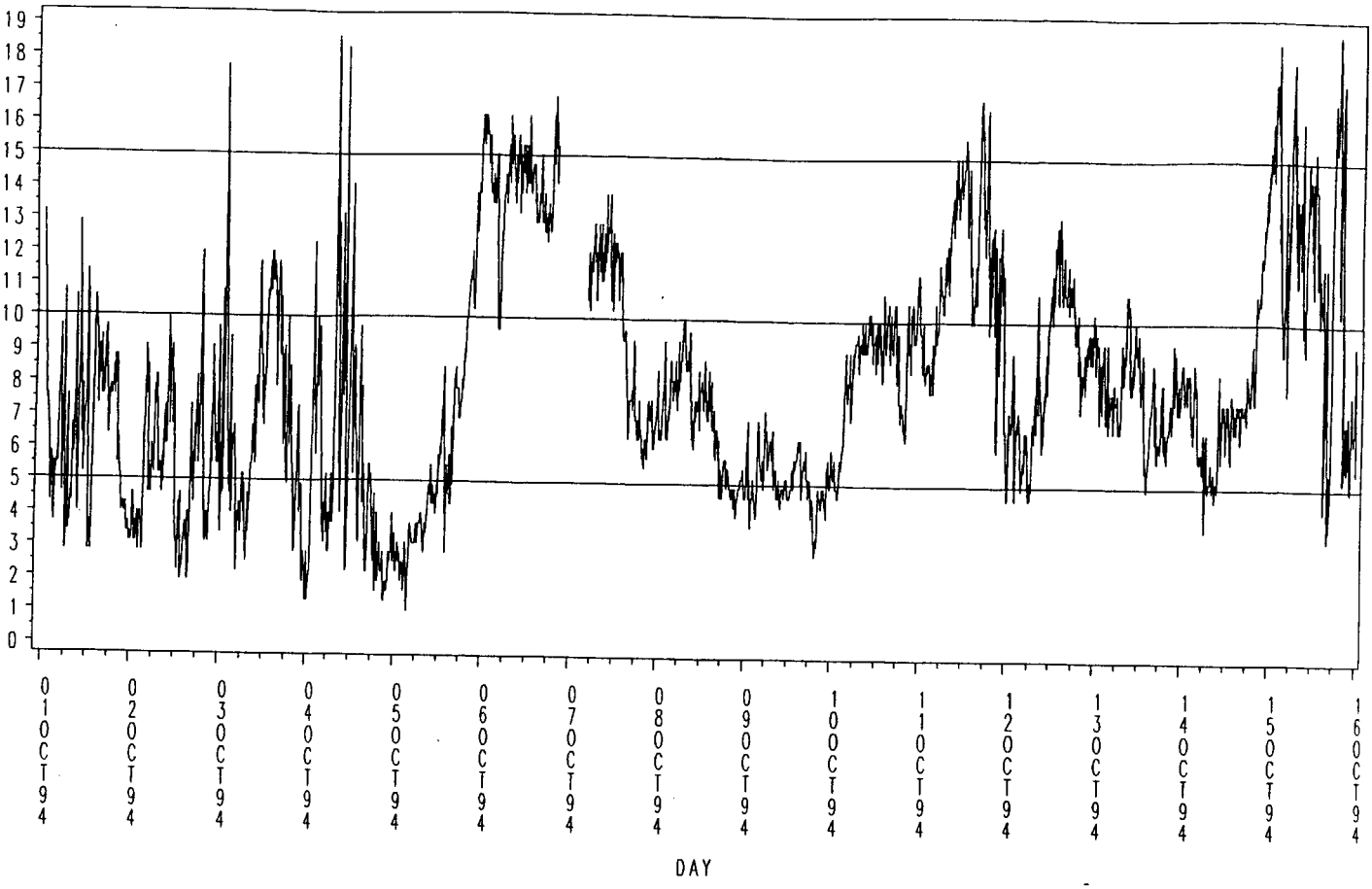
Wind direction 30 m above the ground




DNMI - KLIMAAVDELINGEN

# HANØYTANGEN 1994

Gust wind speed 30 m above the ground (m/s)

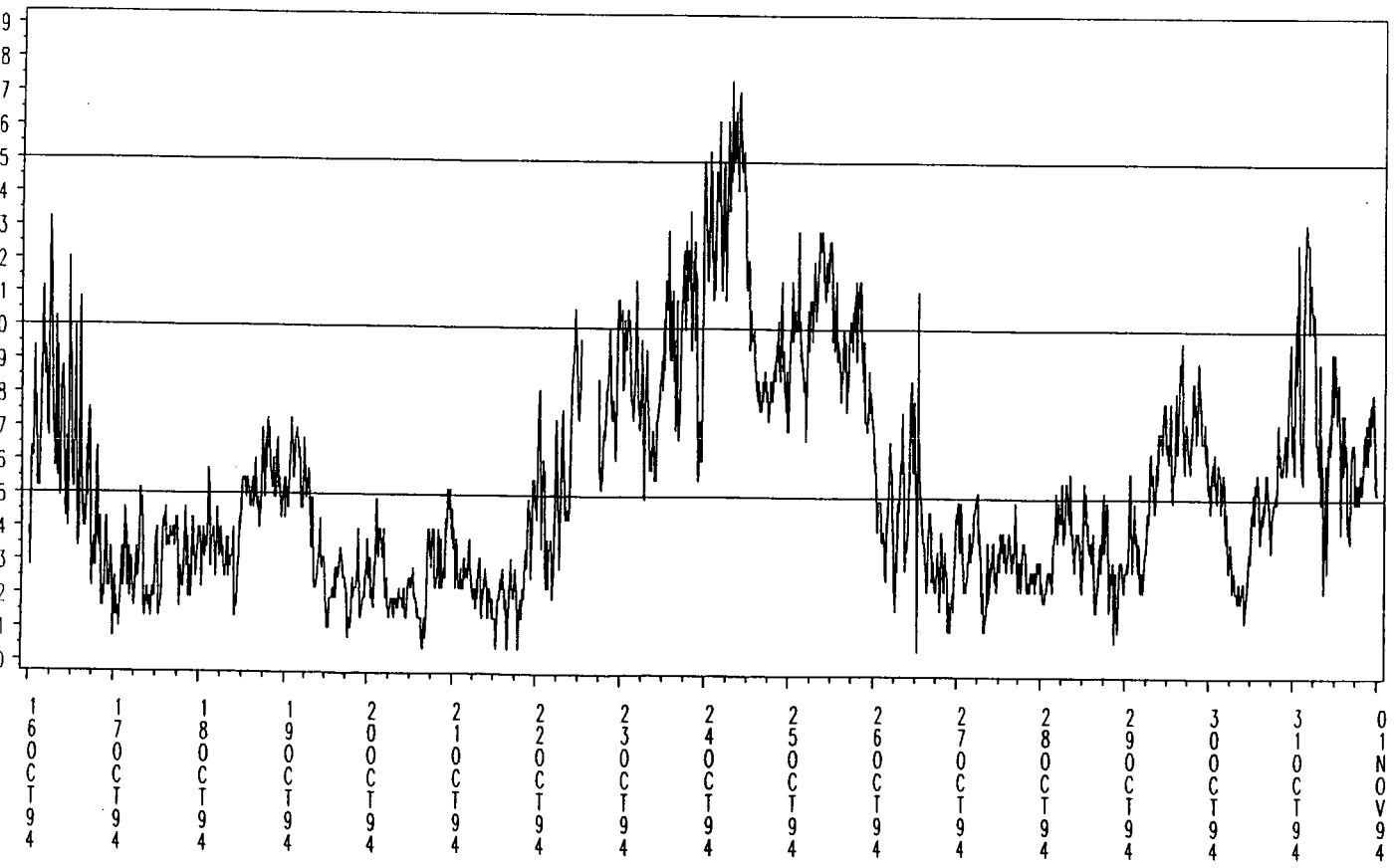



DAY

DNMI - KLIMAAVDELINGEN

# HANØYTANGEN 1994

Gust wind speed 30 m above the ground (m/s)

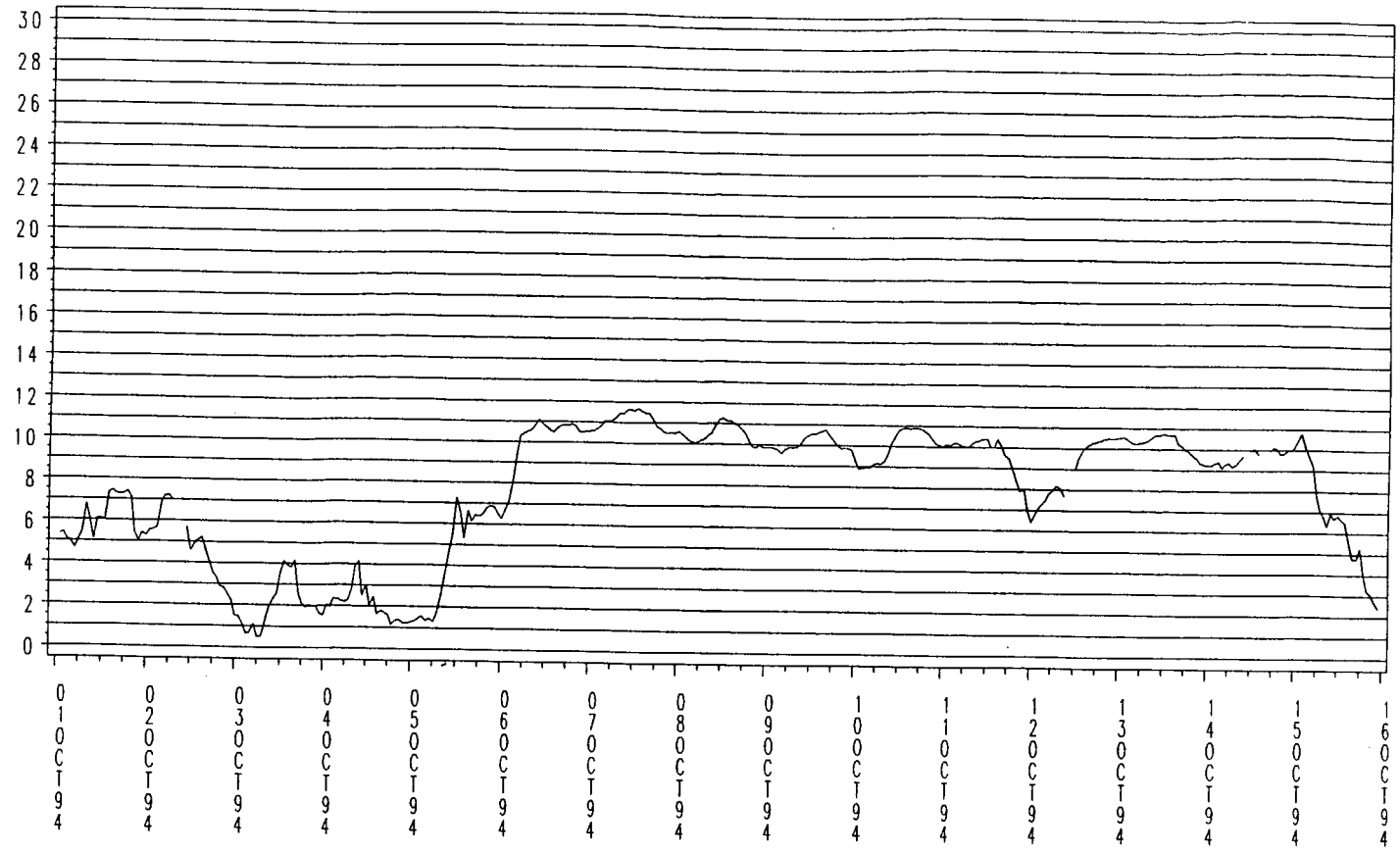



DAY

DNMI - KLIMAAVDELINGEN

# HANØYTANGEN 1994

Air Temperature in degrees C (Hourly Means)

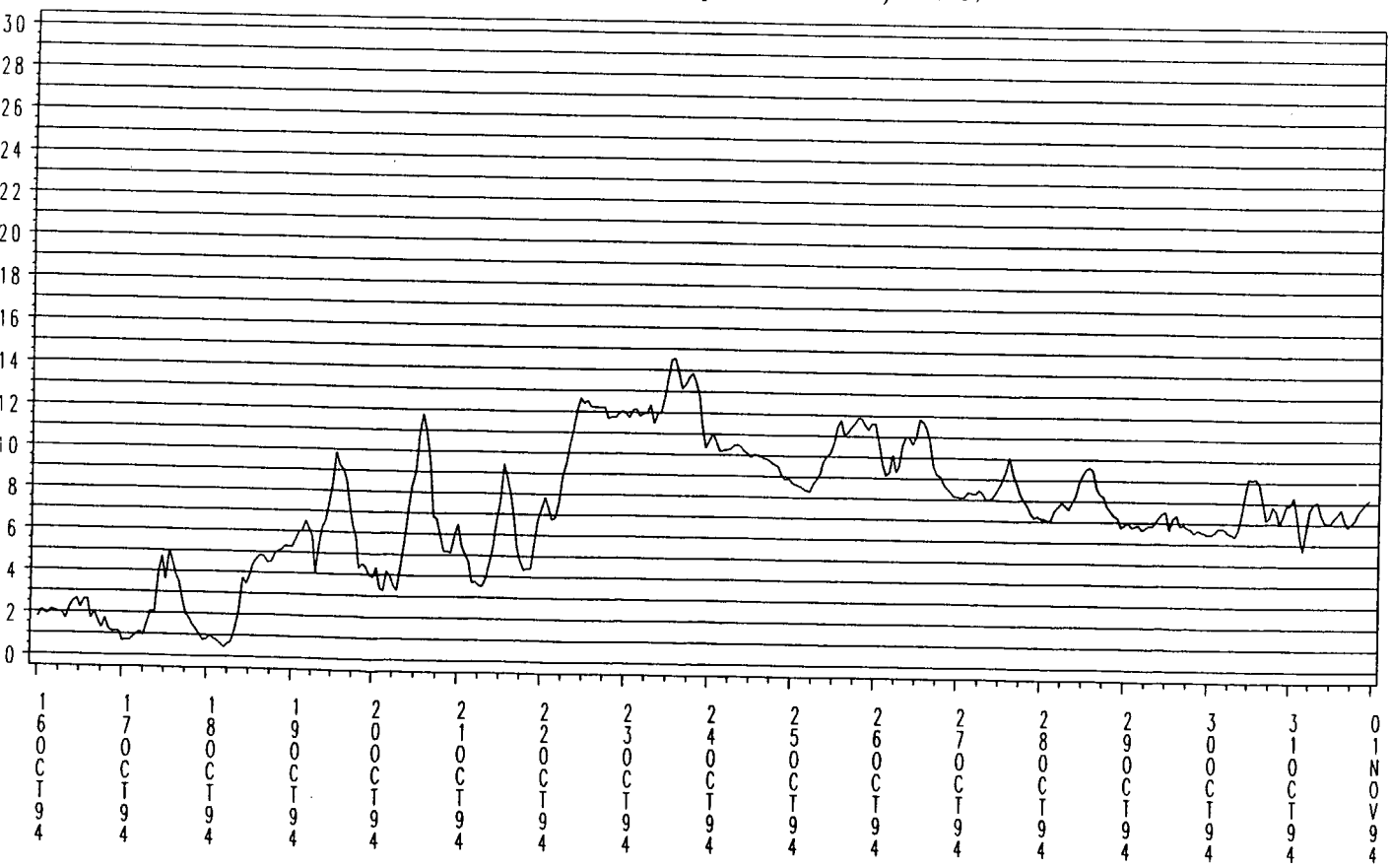



DAY

DNMI - KLIMAAVDELINGEN

# HANØYTANGEN 1994

Air Temperature in degrees C (Hourly Means)

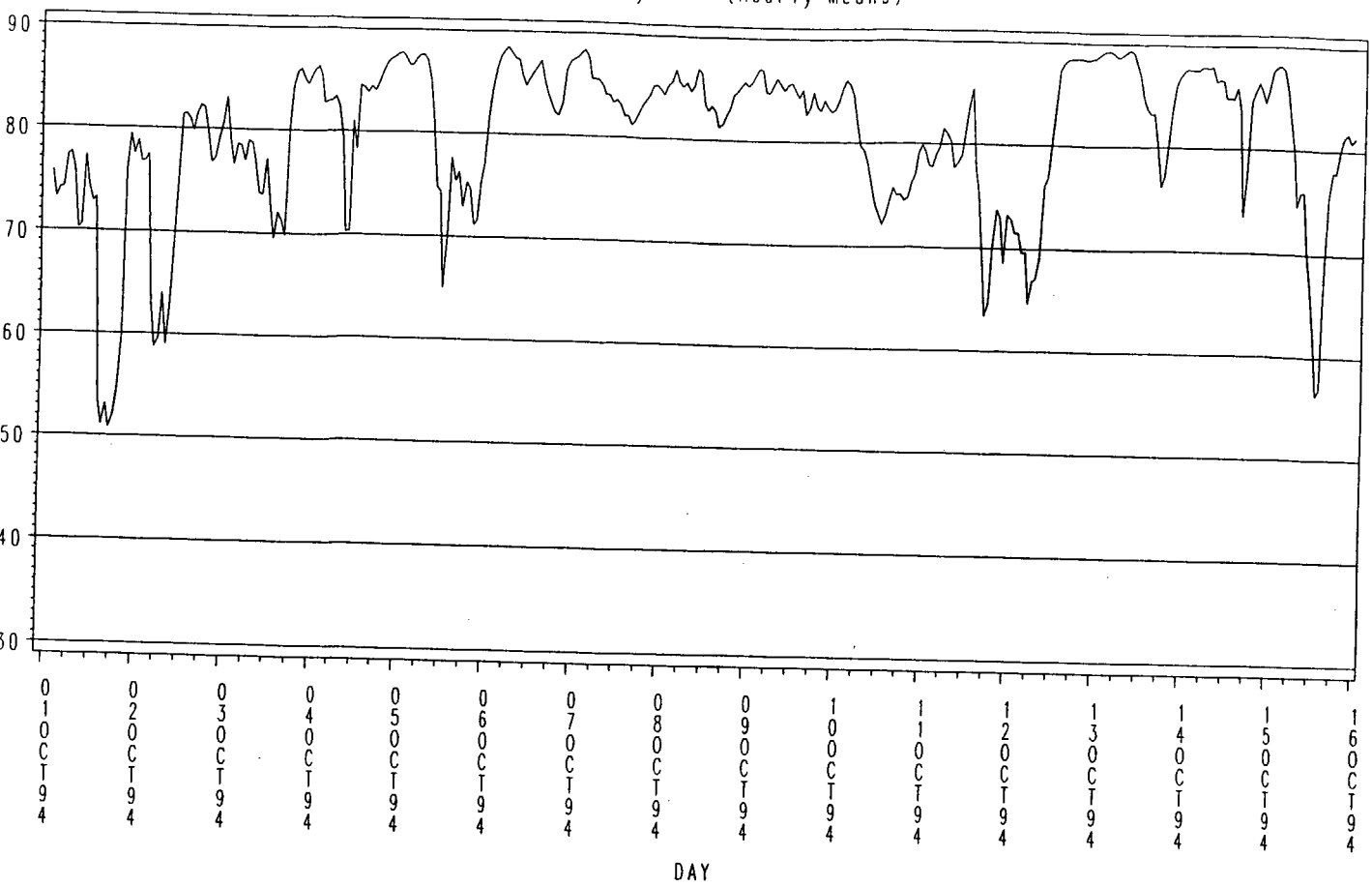



DAY

DNMI - KLIMAAVDELINGEN

# HANØYTANGEN 1994

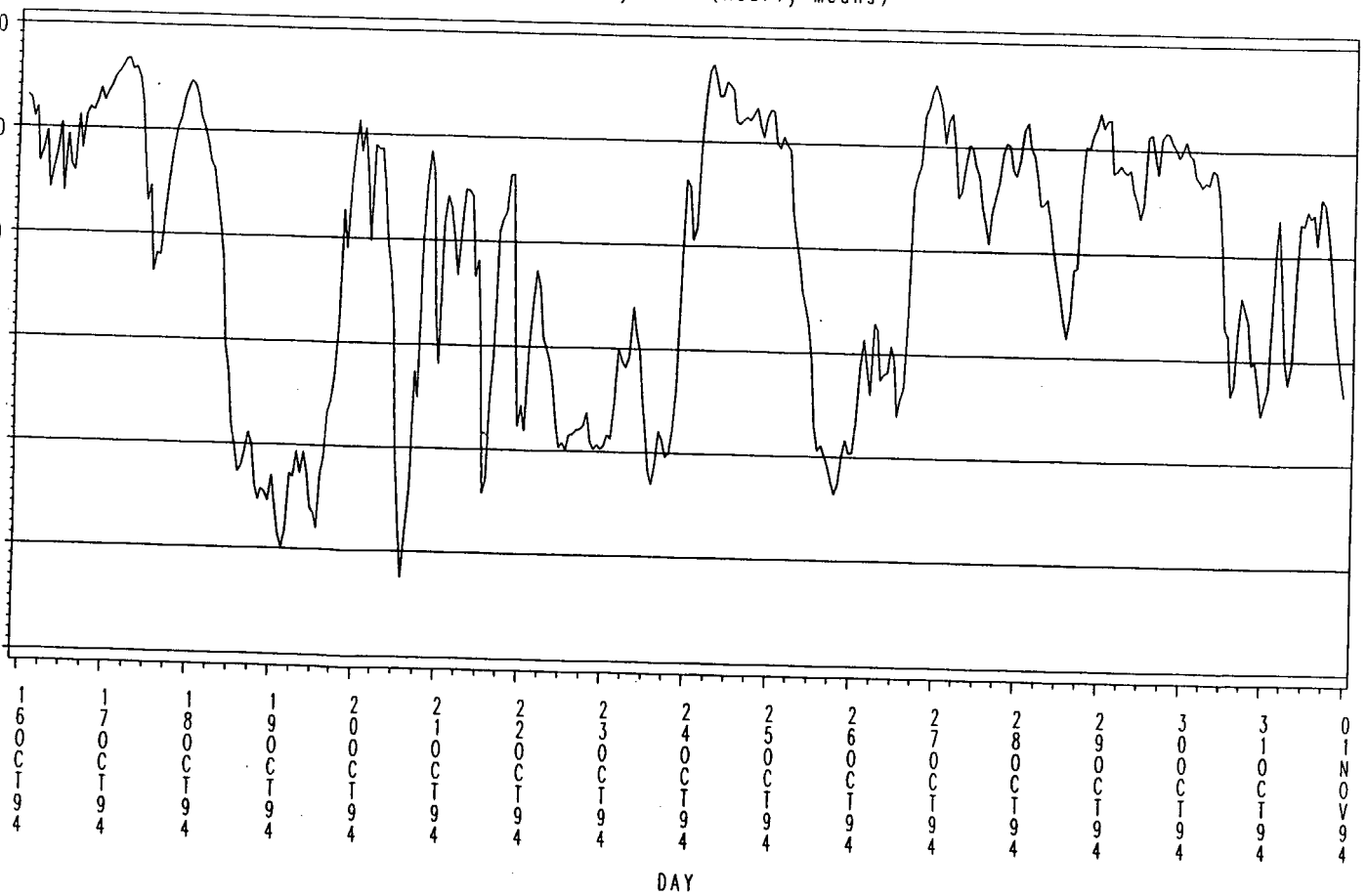
Air Humidity in % (Hourly Means)




DNMI - KLIMAAVDELINGEN

# HANØYTANGEN 1994

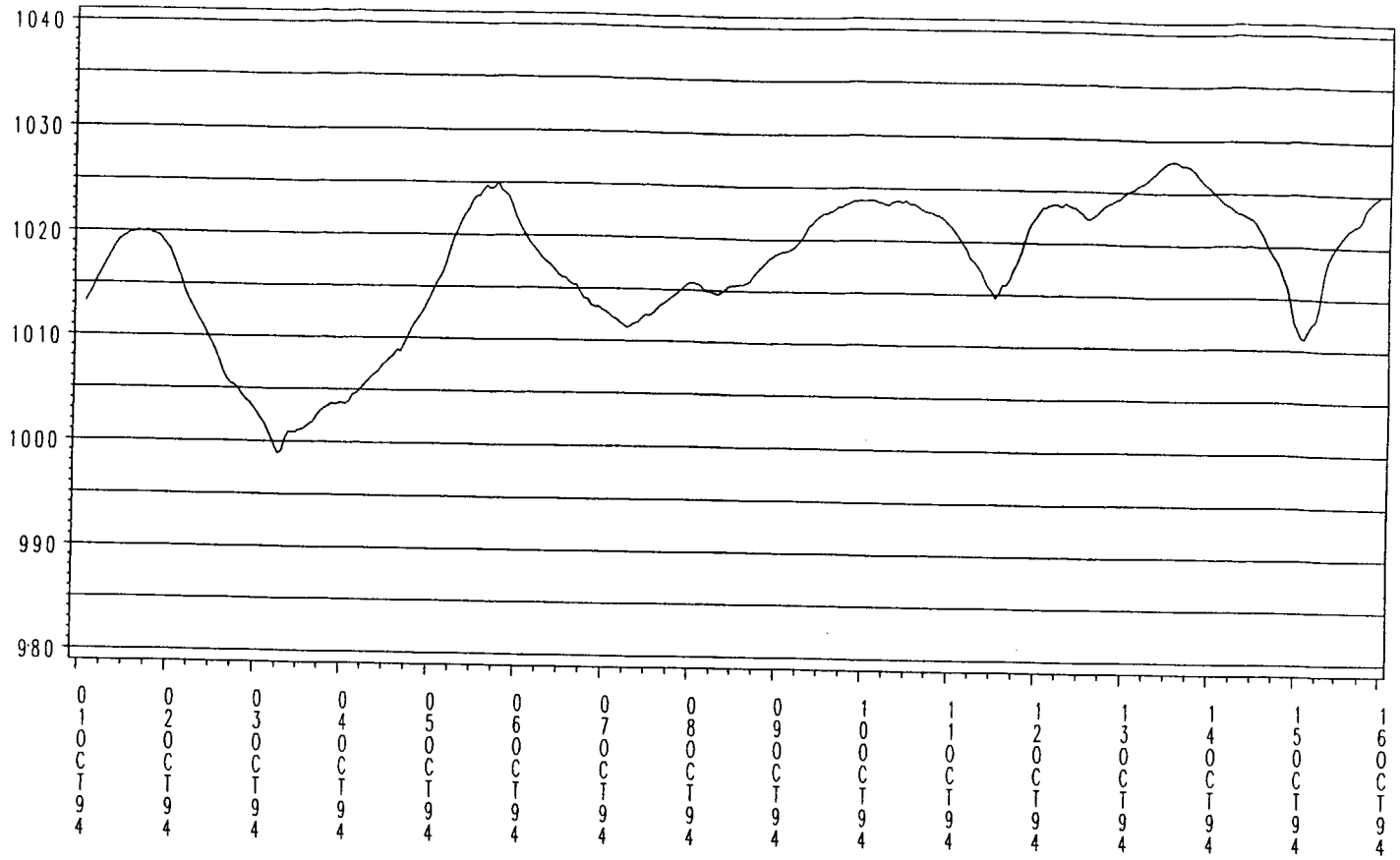
Air Humidity in % (Hourly Means)




DNMI - KLIMAAVDELINGEN

# HANØYTANGEN 1994

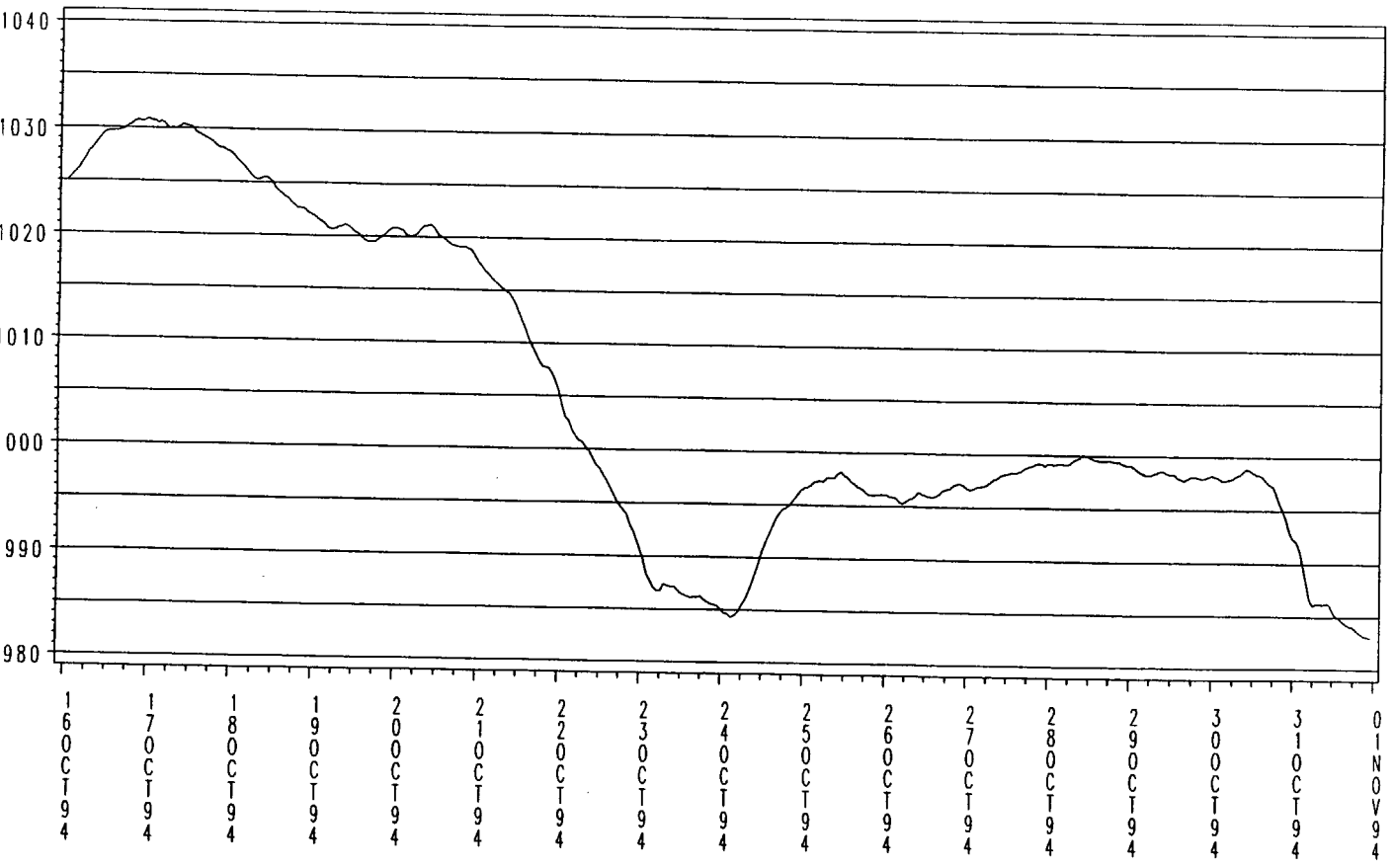
Air Pressure (QFF) in hPa (Hourly Means)




DNMI - KLIMAAVDELINGEN

# HANØYTANGEN 1994

Air Pressure (QFF) in hPa (Hourly Means)




DNMI - KLIMAAVDELINGEN

# DISTRIBUTION TABLES / WIND ROSES

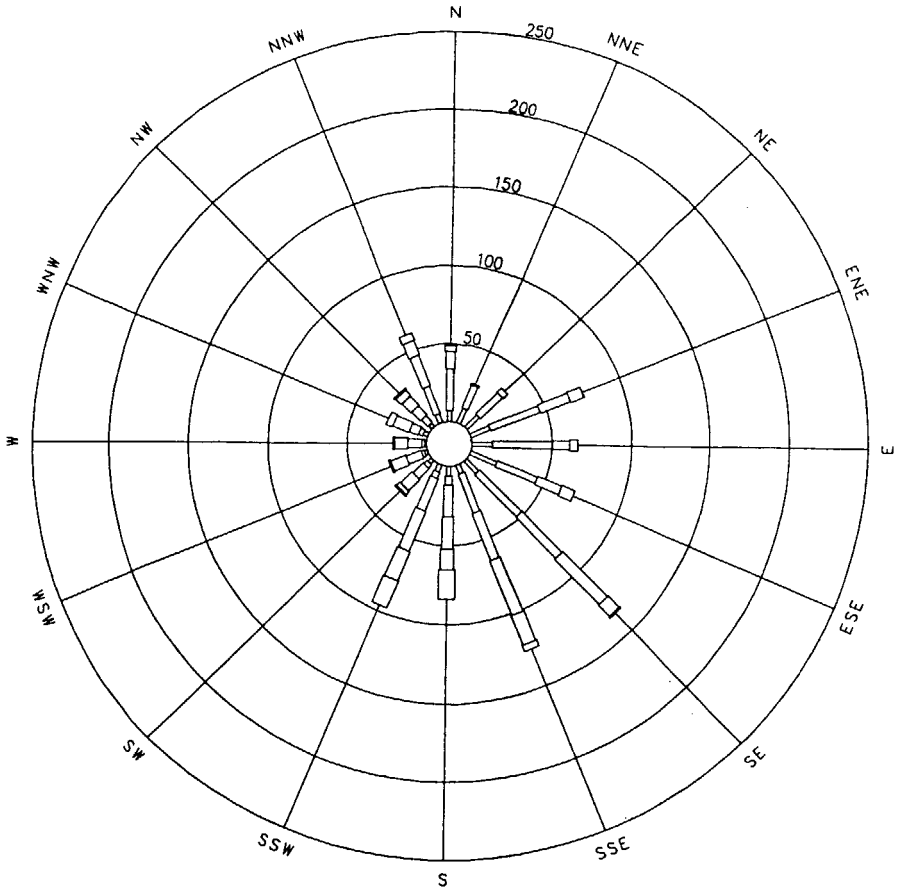
The distribution table gives details about the distribution of the wind speed for a certain wind direction or the distribution of the wind directions for a certain wind speed.

If for example, it is of interest to know the directions for which wind force 5 Beaufort have occurred this month, one has to look at the line for 5 Beaufort in the table.
If the information of the wind forces that have occurred this month for a certain direction is of interest, one has to look at the column for that specific direction.

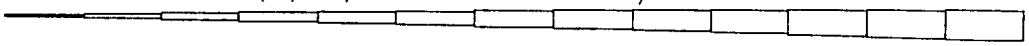
The frequencies in the table are given per thousand (Prm) of the data available this month.

The wind rose is a graphic representation of the information given in the distribution table. The same number of classes is applied. No Beaufort value is given to the centre of the wind rose. Thus, the first class outside the centre is 0 Beaufort (0-0.2 m/s). Due to the calibration of the wind sensors, this class will always be empty at Hanøytangen.

# HANOYTANGEN OCT. 1994 WIND DISTRIBUTION 10 M




LENGTH : (NUMBER OF OBS/NUMBER OF DATA) * 1000
WIDTH = SPEED (M/S / BEAUFORT SCALE)

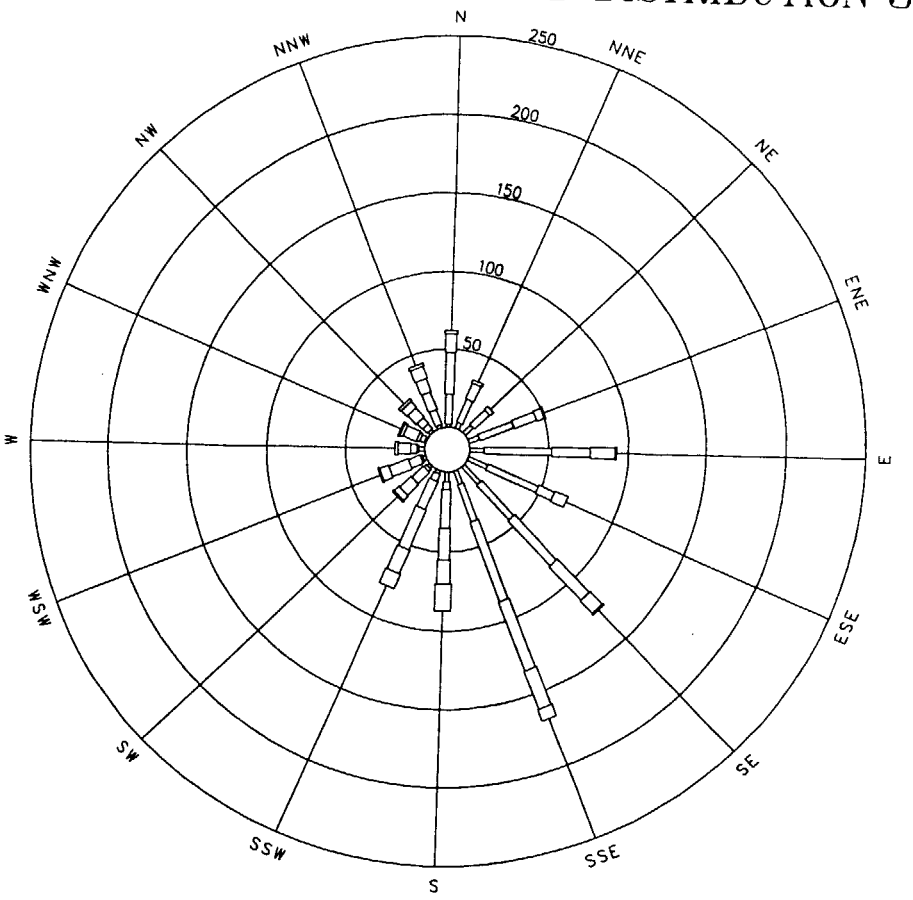


**Wind direction (DD) / Wind speed (Beaufort and m/s) 10 m above the ground**

| | Be-au-fo-rt | DD | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | ALL |
| | | Prm | Prm | Prm | Prm | Prm | Prm | Prm | Prm | Prm | Prm | Prm | Prm | Prm | Prm | Prm | Prm | Prm |
| .2 | 0 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 1.5 | 1 | 7 | 10 | 11 | 13 | 13 | 18 | 11 | 6 | 6 | 5 | 3 | 2 | 1 | 3 | 3 | 6 | 125 |
| 3.3 | 2 | 27 | 16 | 19 | 33 | 37 | 27 | 37 | 26 | 6 | 4 | 3 | 2 | 2 | 3 | 6 | 19 | 275 |
| 5.4 | 3 | 11 | 1 | 4 | 20 | 11 | 16 | 36 | 32 | 20 | 22 | 9 | 10 | 9 | 6 | 8 | 21 | 243 |
| 7.9 | 4 | 4 | . | 0 | 9 | 5 | 9 | 40 | 37 | 20 | 27 | 10 | 10 | 8 | 11 | 8 | 10 | 216 |
| 10.7 | 5 | 0 | . | . | 0 | . | 0 | 10 | 20 | 13 | 20 | 3 | 1 | 1 | 4 | 5 | 5 | 88 |
| 13.8 | 6 | . | . | . | . | . | . | 1 | 4 | 19 | 18 | 1 | 0 | 0 | 0 | 1 | 0 | 48 |
| 17.1 | 7 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 20.7 | 8 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 24.5 | 9 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 28.4 | 10 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 32.6 | 11 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| | 12 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| | ALL | 52 | 27 | 35 | 77 | 68 | 72 | 137 | 129 | 88 | 99 | 31 | 29 | 23 | 29 | 33 | 64 | 1000 |

**PAC 004 WEATHER ANALYSIS IN HANØYTANGEN**
**REPORT 12 : November 25 1994**

# HANOYTANGEN OCT. 1994 WIND DISTRIBUTION 30 M



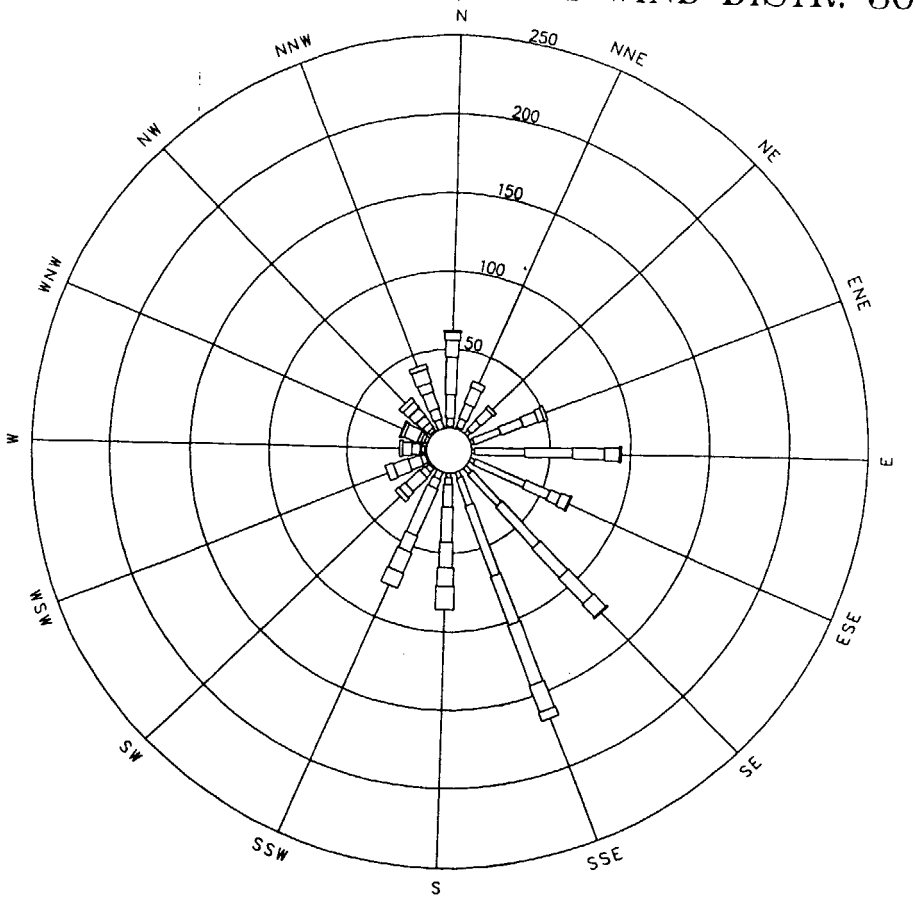

LENGTH : (NUMBER OF OBS/NUMBER OF DATA) * 1000
WIDTH = SPEED (M/S / BEAUFORT SCALE)

**Wind direction (DD) / Wind speed (Beaufort and m/s) 30 m above the ground**

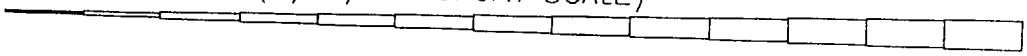
| | Be-au-fo-rt | DD | | | | | | | | | | | | | | | | ALL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | |
| | | Prm | Prm | Prm | Prm | Prm | Prm | Prm | Prm | Prm | Prm | Prm | Prm | Prm | Prm | Prm | Prm | Prm |
| .2 | 0 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 1.5 | 1 | 2 | 4 | 7 | 7 | 9 | 13 | 15 | 9 | 6 | 2 | 2 | 2 | 4 | 1 | 2 | 2 | 94 |
| 3.3 | 2 | 19 | 16 | 13 | 23 | 43 | 35 | 30 | 25 | 5 | 5 | 2 | 1 | 1 | 3 | 4 | 10 | 242 |
| 5.4 | 3 | 27 | 11 | 3 | 15 | 24 | 11 | 39 | 53 | 24 | 19 | 10 | 8 | 4 | 2 | 5 | 12 | 273 |
| 7.9 | 4 | 12 | 2 | 0 | 5 | 16 | 9 | 29 | 47 | 20 | 27 | 10 | 13 | 8 | 9 | 8 | 9 | 231 |
| 10.7 | 5 | 2 | 0 | . | 1 | 1 | 0 | 11 | 26 | 15 | 16 | 4 | 6 | 2 | 2 | 5 | 8 | 106 |
| 13.8 | 6 | 0 | . | . | . | . | . | 1 | 8 | 17 | 10 | 1 | 1 | 0 | 1 | 2 | 2 | 47 |
| 17.1 | 7 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 0 | 0 |
| 20.7 | 8 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 24.5 | 9 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 28.4 | 10 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 32.6 | 11 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| | 12 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| | ALL | 65 | 35 | 25 | 53 | 95 | 71 | 129 | 170 | 90 | 81 | 32 | 32 | 20 | 21 | 28 | 47 | 1000 |

**PAC 004 WEATHER ANALYSIS IN HANØYTANGEN**
**REPORT 12 : November 25 1994**

# HANOYTANGEN OCT. 1994 GUST WIND DISTR. 30 M




LENGTH : (NUMBER OF OBS/NUMBER OF DATA) * 1000
WIDTH = SPEED (M/S / BEAUFORT SCALE)



Wind direction (DD)/ Gust wind speed (m/s) 30 m above the ground.

| m/s | DD | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | ALL |
| | Prm | Prm | Prm | Prm | Prm | Prm | Prm | Prm | Prm | Prm | Prm | Prm | Prm | Prm | Prm | Prm | Prm |
| 0-.2 | 0 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 0 |
| 0.3-1.5 | 1 | 1 | 3 | 2 | 2 | 3 | 5 | 4 | 3 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 34 |
| 1.6-3.3 | 5 | 6 | 8 | 18 | 32 | 35 | 27 | 18 | 4 | 5 | 3 | 1 | 2 | 2 | 2 | 6 | 182 |
| 3.4-5.4 | 15 | 10 | 10 | 15 | 30 | 17 | 35 | 47 | 14 | 6 | 4 | 3 | 1 | 2 | 4 | 7 | 225 |
| 5.5-7.9 | 24 | 11 | 2 | 10 | 20 | 7 | 25 | 33 | 22 | 32 | 12 | 8 | 5 | 2 | 5 | 11 | 237 |
| 8.0-10.7 | 11 | 4 | 0 | 4 | 9 | 6 | 22 | 41 | 16 | 11 | 5 | 10 | 6 | 9 | 6 | 6 | 173 |
| 10.8-13.8 | 5 | 0 | . | 2 | 1 | 1 | 11 | 18 | 12 | 14 | 3 | 5 | 2 | 2 | 5 | 9 | 97 |
| 13.9-17.1 | 1 | . | . | . | . | . | 1 | 6 | 15 | 10 | 0 | 0 | 0 | 1 | 3 | 3 | 45 |
| 17.2-20.7 | 0 | . | . | . | . | . | . | . | 0 | . | 0 | 0 | . | 0 | 0 | 0 | 2 |
| 20.8-24.5 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 24.5-28.4 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 28.5-32.6 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| > 32.6 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| ALL | 65 | 35 | 25 | 53 | 95 | 71 | 129 | 170 | 90 | 81 | 32 | 32 | 20 | 21 | 28 | 47 | 1000 |

**PAC 004 WEATHER ANALYSIS IN HANØYTANGEN**
**REPORT 12 : November 25 1994**

# COEFFICIENT TRANSFERT TABLES

The tables are actually histograms of the quotient given in the heading of the tables, plotted horizontally. They give details about the distribution of the quotients.

The class interval is 0.5 and the frequencies for the actual class is plotted at the midpoint of the class. If the quotient is 1 the wind speed in the two heights considered have the same value.

The classes start at 0.75 (.725-.774) and end at 1.80 (1.775-1.825). Quotients below or above these limits are counted in these classes respectively.

The tables are giving the frequencies in the actual classes in percent and also as cumulative frequencies in percent.

F30 = Wind speed 30 m above the ground
F18 = Wind speed 18 m above the ground
F10 = Wind speed 10 m above the ground

# HANØYTANGEN OCT. 1994

QUOTIENT F30/F18

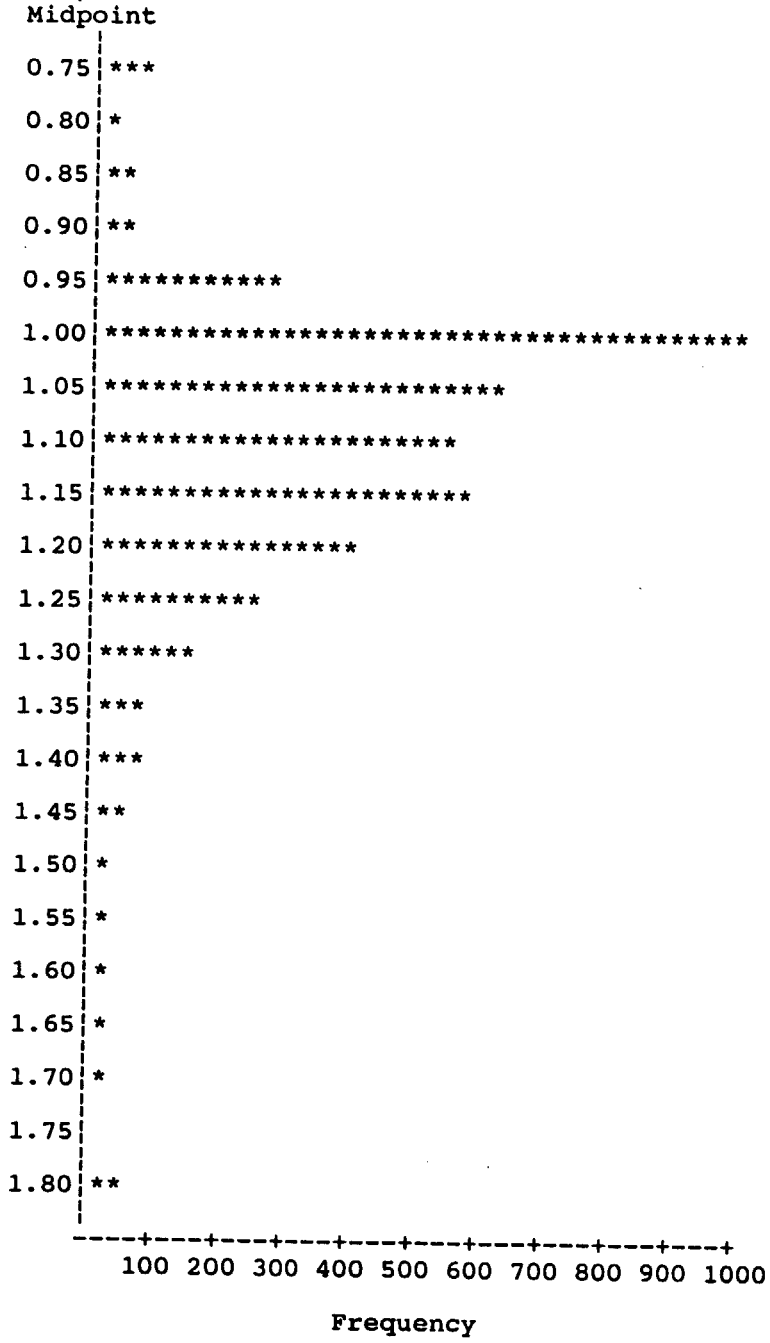
| F30/F18 Midpoint | | Freq | Cum. Freq | Percent | Cum. Percent |
|---|---|---|---|---|---|
| 0.75 | * | 38 | 38 | 0.87 | 0.87 |
| 0.80 | | 14 | 52 | 0.32 | 1.19 |
| 0.85 | * | 37 | 89 | 0.84 | 2.03 |
| 0.90 | * | 53 | 142 | 1.21 | 3.24 |
| 0.95 | *** | 163 | 305 | 3.72 | 6.96 |
| 1.00 | ******************************** | 1515 | 1820 | 34.58 | 41.54 |
| 1.05 | ********************** | 1047 | 2867 | 23.90 | 65.44 |
| 1.10 | ************ | 632 | 3499 | 14.43 | 79.87 |
| 1.15 | ****** | 310 | 3809 | 7.08 | 86.94 |
| 1.20 | ***** | 227 | 4036 | 5.18 | 92.13 |
| 1.25 | ** | 110 | 4146 | 2.51 | 94.64 |
| 1.30 | ** | 89 | 4235 | 2.03 | 96.67 |
| 1.35 | * | 46 | 4281 | 1.05 | 97.72 |
| 1.40 | * | 34 | 4315 | 0.78 | 98.49 |
| 1.45 | | 18 | 4333 | 0.41 | 98.90 |
| 1.50 | | 15 | 4348 | 0.34 | 99.25 |
| 1.55 | | 8 | 4356 | 0.18 | 99.43 |
| 1.60 | | 6 | 4362 | 0.14 | 99.57 |
| 1.65 | | 2 | 4364 | 0.05 | 99.61 |
| 1.70 | | 1 | 4365 | 0.02 | 99.63 |
| 1.75 | | 7 | 4372 | 0.16 | 99.79 |
| 1.80 | | 9 | 4381 | 0.21 | 100.00 |

400 800 1200

Frequency

# HANØYTANGEN OCT. 1994

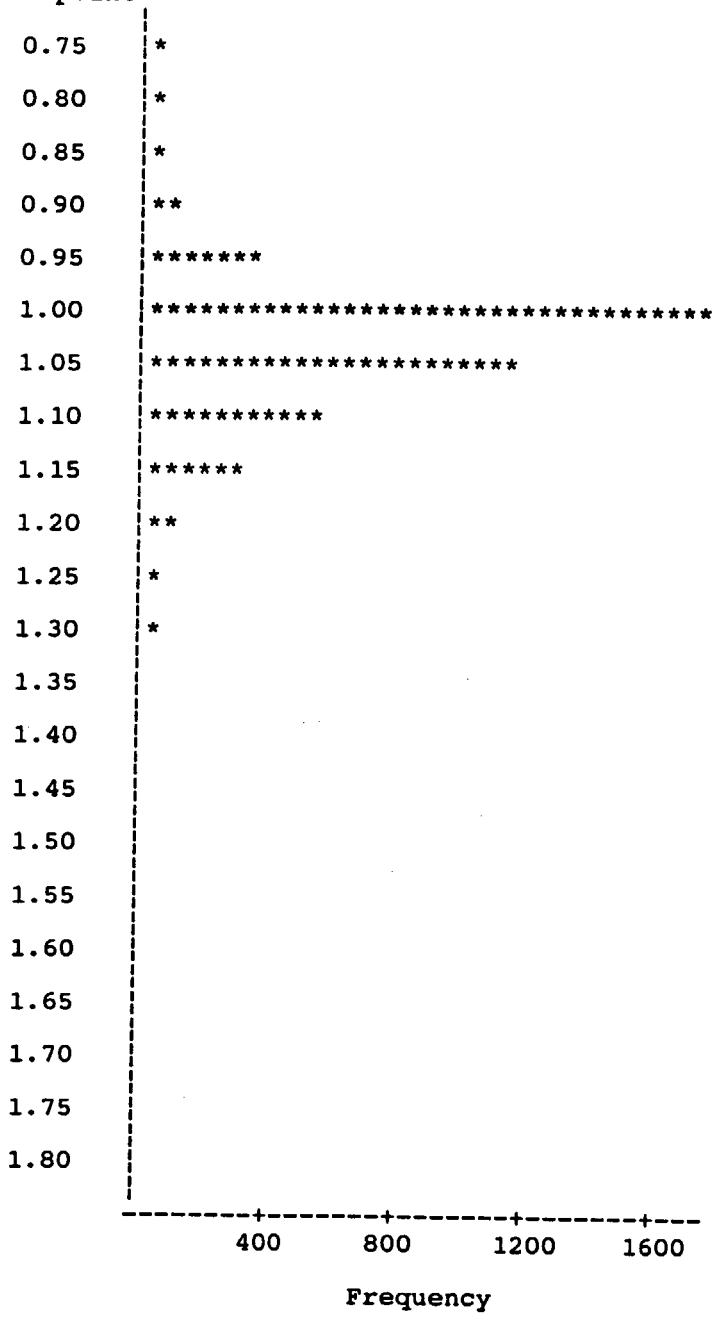
QUOTIENT F30/F10




| F30/F10 Midpoint | Freq | Cum. Freq | Percent | Cum. Percent |
|---|---|---|---|---|
| 0.75 | 74 | 74 | 1.69 | 1.69 |
| 0.80 | 24 | 98 | 0.55 | 2.24 |
| 0.85 | 41 | 139 | 0.94 | 3.17 |
| 0.90 | 62 | 201 | 1.42 | 4.59 |
| 0.95 | 275 | 476 | 6.28 | 10.87 |
| 1.00 | 1011 | 1487 | 23.08 | 33.94 |
| 1.05 | 624 | 2111 | 14.24 | 48.19 |
| 1.10 | 562 | 2673 | 12.83 | 61.01 |
| 1.15 | 581 | 3254 | 13.26 | 74.28 |
| 1.20 | 398 | 3652 | 9.08 | 83.36 |
| 1.25 | 238 | 3890 | 5.43 | 88.79 |
| 1.30 | 160 | 4050 | 3.65 | 92.44 |
| 1.35 | 85 | 4135 | 1.94 | 94.38 |
| 1.40 | 63 | 4198 | 1.44 | 95.82 |
| 1.45 | 39 | 4237 | 0.89 | 96.71 |
| 1.50 | 22 | 4259 | 0.50 | 97.22 |
| 1.55 | 25 | 4284 | 0.57 | 97.79 |
| 1.60 | 16 | 4300 | 0.37 | 98.15 |
| 1.65 | 18 | 4318 | 0.41 | 98.56 |
| 1.70 | 13 | 4331 | 0.30 | 98.86 |
| 1.75 | 9 | 4340 | 0.21 | 99.06 |
| 1.80 | 41 | 4381 | 0.94 | 100.00 |

# HANØYTANGEN OCT. 1994

QUOTIENT F18/F10




| F18/F10 Midpoint | Freq | Cum. Freq | Percent | Cum. Percent |
|---|---|---|---|---|
| 0.75 | 42 | 42 | 0.94 | 0.94 |
| 0.80 | 27 | 69 | 0.60 | 1.55 |
| 0.85 | 32 | 101 | 0.72 | 2.26 |
| 0.90 | 90 | 191 | 2.02 | 4.28 |
| 0.95 | 349 | 540 | 7.82 | 12.10 |
| 1.00 | 1725 | 2265 | 38.64 | 50.74 |
| 1.05 | 1139 | 3404 | 25.52 | 76.25 |
| 1.10 | 542 | 3946 | 12.14 | 88.40 |
| 1.15 | 281 | 4227 | 6.29 | 94.69 |
| 1.20 | 119 | 4346 | 2.67 | 97.36 |
| 1.25 | 51 | 4397 | 1.14 | 98.50 |
| 1.30 | 29 | 4426 | 0.65 | 99.15 |
| 1.35 | 12 | 4438 | 0.27 | 99.42 |
| 1.40 | 9 | 4447 | 0.20 | 99.62 |
| 1.45 | 8 | 4455 | 0.18 | 99.80 |
| 1.50 | 3 | 4458 | 0.07 | 99.87 |
| 1.55 | 2 | 4460 | 0.04 | 99.91 |
| 1.60 | 1 | 4461 | 0.02 | 99.93 |
| 1.65 | 0 | 4461 | 0.00 | 99.93 |
| 1.70 | 1 | 4462 | 0.02 | 99.96 |
| 1.75 | 1 | 4463 | 0.02 | 99.98 |
| 1.80 | 1 | 4464 | 0.02 | 100.00 |

# OCCURRENCE TABLES

The content of the table is based on the hourly maxima (Fx) of the 10 min wind speed. First a period fulfilling the criterion Fx < Limit is sought. The lenght of this period is divided by the length of the windows specified and may result in multiples of the actual window or zero if the length of the period is less than the length of the actual window. This procedure is repeated through the month and the number of the different windows are accumulated.

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Observation Period : | | | | | | | | | | Location : | |
| From :01/10/94 | | OCTOBER 1994 | | | | | | | | Level : 10 m a.gr. | |
| To : 31/10/94 | | | | | | | | | | Coordinates: | |
| Coverage : 100.0 % | | HANØYTANGEN | | | | | | | | X = 71908 | |
| Number of data: 4464 | | | | | | | | | | Y = 47414 | |
| | | OCCURRENCE TABLE | | | | | | | | | |
| | | NUMBER OF WINDOWS FROM 6 TO 72 HOURS | | | | | | | | | |
| Wind Speed <= Beaufort | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | |
| Duration | | | | | | | | | | | |
| 6 H | | 0 | 22 | 51 | 92 | 111 | 124 | 124 | 124 | | |
| 12 H | | 0 | 8 | 19 | 43 | 54 | 62 | 62 | 62 | | |
| 18 H | | 0 | 3 | 12 | 25 | 35 | 41 | 41 | 41 | | |
| 24 H | | 0 | 2 | 8 | 20 | 26 | 31 | 31 | 31 | | |
| 48 H | | 0 | 1 | 3 | 8 | 11 | 15 | 15 | 15 | | |
| 72 H | | 0 | 0 | 1 | 3 | 7 | 10 | 10 | 10 | | |
| Remarks : Based on maximum 10mn wind speed within the interval period, in any direction, at 10 metres level | | | | | | | | | | | |

# CLIMATOLOGICAL SUMMARY

| Observation Period : | | | | | | | | | | | Location: | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| From : 01/10/94 | | | | | | | | | | | Level: | 2 m a.gr. |
| To : 31/10/94 | | | | | | HANØYTANGEN 1994 | | | | | | |
| Coverage : 99.4-100.0 % | | | | | | | | | | | | |
| Number of data :4439-4464 | | | | | | | | | | | | |
| | | | | | | CLIMATOLOGICAL SUMMARY | | | | | | |
| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
| Air Temperature | | | | | | | | | | | | |
| Mean Day min. | 0.2 | -2.1 | 0.8 | 3.7 | 6.1 | 8.4 | 12.6 | 12.1 | 9.2 | 5.5 | | |
| Abs min | -4 | -6.3 | -5.1 | 0.3 | 1.1 | 4 | 8.7 | 8.1 | 3.2 | 0.2 | | |
| Mean Day max. | 3.8 | 3.3 | 5.3 | 8.4 | 13.2 | 12.3 | 19.4 | 17.7 | 14.7 | 9.8 | | |
| Abs max. | 6.7 | 6.4 | 10.5 | 14.9 | 22.7 | 18.4 | 26.4 | 29 | 22.1 | 14.8 | | |
| Mean | 2.1 | 0.1 | 3 | 5.9 | 9.5 | 10.2 | 15.8 | 14.6 | 11.8 | 7.5 | | |
| Relative Humidity | | | | | | | | | | | | |
| Mean Day min. | 61 | 44 | 59 | 57 | 44 | 64 | 56 | 57 | 52 | 60 | | |
| Abs min. | 44 | 27 | 29 | 30 | 19 | 40 | 25 | 32 | 23 | 35 | | |
| Mean Day max. | 81 | 73 | 84 | 84 | 80 | 86 | 85 | 84 | 82 | 84 | | |
| Abs max. | 89 | 90 | 89 | 91 | 89 | 93 | 91 | 89 | 91 | 90 | | |
| Mean | 70 | 60 | 73 | 72 | 63 | 78 | 72 | 73 | 69 | 74 | | |
| Air pressure | | | | | | | | | | | | |
| Mean Day min. | 991.6 | 1016.7 | 993.4 | 1004.4 | 1013.7 | 1008.3 | 1017.7 | 1010.1 | 1006.6 | 1007.4 | | |
| Abs min. | 966.2 | 989.7 | 969.4 | 970.9 | 1004.7 | 991.9 | 1010.8 | 996.9 | 985.6 | 983 | | |
| Mean Day max. | 1003.5 | 1023.6 | 1004.7 | 1011.8 | 1018 | 1015.8 | 1020.9 | 1015.1 | 1012.1 | 1014.2 | | |
| Abs max. | 1019.6 | 1045.2 | 1024.3 | 1028.8 | 1027.8 | 1028.1 | 1026.4 | 1023.5 | 1023.7 | 1030.9 | | |
| Mean | 998 | 1020 | 999.1 | 1008.2 | 1016 | 1012.2 | 1019.3 | 1012.5 | 1010.3 | 1011 | | |
| Coeficient Transfert | | | | | | | | | | | | |
| from level 10 to 18 | 1.051 | 1.046 | 1.024 | 1.022 | 1.049 | 1.035 | 1.04 | 1.048 | 1.044 | 1.037 | | |
| from level 10 to 30 | 1.117 | 1.088 | 1.055 | 1.053 | 1.119 | 1.067 | 1.077 | 1.117 | 1.115 | 1.12 | | |
| from level 18 to 30 | 1.059 | 1.036 | 1.029 | 1.032 | 1.063 | 1.03 | 1.032 | 1.063 | 1.065 | 1.068 | | |
| Remarks: | | | | | | | | | | | | |
| The summary is based on air temperature, humidity and pressure measured each 10 minute. | | | | | | | | | | | | |

# ESTIMATES OF WIND SPEED WITH 10/100 YEAR RETURN PERIODS

The method for the estimation is described in the report 43/92 KLIMA, Climatological statistics for Hanøytangen near Bergen. The long data series from Hellisøy is the basis for the computations of 10/100 year values.

At Hellisøy the automatic weather station was out of operation regarding all parameters by the end of 1993. The wind speed measurements were functioning again from 3.2.1994. It must be emphasized that when May 1994 was specified as the first month of which 10/100 years should be presented for Hanøytangen, the starting of the parallel series was assumed to be September 1993.

At the end of October 1994 the parallel series between Hellisøy and Hanøytangen, which is the basis for establishing 10/100 year values valid for Hanøytangen, is still short. It covers the period 3.2-31.10.1994 with some gaps due to missing data at Hanøytangen and in September also at Hellisøy. The values given below must therefore still be regarded as approximations. The differences in the transfer coefficients when compared to those computed in the earlier reports are indications of this. A detail is reduced transfer coefficient for the sector 200°-229° leading to reduced 10/100 years estimates for this sector where the extreme most probably will occur.

Detailed discussion of the results must be postponed to a longer parallel series is available. The preliminary results however, should not give reason to change the 10/100 years estimates for the 10 min mean given in the report 43/92 KLIMA for the direction where the maximum most probably will occur. The transfer coefficients for the gust wind is lower than the estimates used in the report 43/92 KLIMA. Thus the estimates for the gust wind in this report may seem to high.

*Estimates of transfer coefficients based on data from Hellisøy (He) and Hanøytangen (Ha) for the period 3.2-31.10.1994.*

| V(Han.,10 min)/V(He.,10 min)<br>V(Han.,3 sec.)/V(He.,10 min) | | | | | | |
|---|---|---|---|---|---|---|
| 030-129° | 130-159° | 160-199° | 200-229° | 230-299° | 300-339° | 340-029° |
| 0.73<br>1.08 | 0.73<br>1.02 | 0.75<br>1.07 | 0.79<br>1.05 | 0.73<br>1.04 | 0.68<br>0.95 | 0.68<br>0.95 |

The estimates for the wind speed at Hellisøy given below and these new transfer coefficients are applied to compute the wind speed estimates for Hanøytangen.

*Estimates of extreme values for the 10 min mean of the wind speed ($V_{10}$) with return periods 10 and 100 years valid for Hellisøy Fyr.*

| | SUMMER | | WINTER | |
|---|---|---|---|---|
| | May - August | | September - April | |
| DIRECTION | $V_{10}10$ | $V_{10}100$ | $V_{10}10$ | $V_{10}100$ |
| 030-060° | 12.3 | 14.7 | 19.2 | 21.7 |
| 070-100° | 13.0 | 15.5 | 16.6 | 18.8 |
| 110-120° | 18.1 | 21.6 | 24.4 | 27.6 |
| 130-150° | 20.6 | 24.6 | 28.3 | 32.0 |
| 160-190° | 23.8 | 28.4 | 30.5 | 34.4 |
| 200-220° | 23.8 | 28.4 | 30.5 | 34.4 |
| 230-290° | 21.6 | 25.8 | 27.6 | 31.2 |
| 300-330° | 21.1 | 25.2 | 28.6 | 32.3 |
| 340-020° | 21.6 | 25.8 | 28.3 | 32.3 |

*Estimates of values for the 10 min mean wind speed ($V_{10}$) with return periods 10 and 100 years valid for Hanøytangen. The estimates are based on computations made for Hellisøy Fyr and the parallel series between Hellisøy Fyr and Hanøytangen for the period 3.2-31.10.1994.*

| | SUMMER | | WINTER | |
|---|---|---|---|---|
| | May - August | | September - April | |
| DIRECTION | $V_{10}10$ | $V_{10}100$ | $V_{10}10$ | $V_{10}100$ |
| 030-060° | 9.0 | 10.7 | 14.0 | 15.8 |
| 070-100° | 9.5 | 11.3 | 12.1 | 13.7 |
| 110-120° | 13.2 | 15.8 | 17.8 | 20.1 |
| 130-150° | 15.0 | 18.0 | 20.7 | 23.4 |
| 160-190° | 17.9 | 21.3 | 22.9 | 25.8 |
| 200-220° | 18.8 | 22.4 | 24.1 | 27.2 |
| 230-290° | 15.8 | 18.8 | 20.1 | 22.8 |
| 300-330° | 14.3 | 17.1 | 19.4 | 22.0 |
| 340-020° | 14.7 | 17.5 | 19.2 | 22.0 |

*Estimates of values for the 3 sec. gust wind speed ($V_g$) with return periods 10 and 100 years valid for Hanøytangen. The estimates are based on computations made for Hellisøy Fyr and the parallel series between Hellisøy Fyr and Hanøytangen for the period 3.2-31.10.1994.*

| | SUMMER | | WINTER | |
|---|---|---|---|---|
| | May - August | | September - April | |
| DIRECTION | $V_g10$ | $V_g100$ | $V_g10$ | $V_g100$ |
| 030-060° | 13.3 | 15.9 | 20.7 | 23.4 |
| 070-100° | 14.0 | 16.7 | 17.9 | 20.3 |
| 110-120° | 19.5 | 23.3 | 26.4 | 29.8 |
| 130-150° | 21.0 | 25.3 | 28.9 | 32.6 |
| 160-190° | 25.5 | 30.4 | 32.6 | 36.8 |
| 200-220° | 25.0 | 29.8 | 32.0 | 36.1 |
| 230-290° | 22.5 | 26.8 | 28.7 | 32.4 |
| 300-330° | 20.0 | 23.9 | 27.2 | 30.7 |
| 340-020° | 20.5 | 24.5 | 26.9 | 30.7 |

Appendix 1

# BEAUFORT SCALE OF WIND

| BEAUFORT NUMBER | DESCRIPTIVE TERM | MEAN VELOCITY IN KNOTS | MEAN VELOCITY IN m/s |
|---|---|---|---|
| 0 | Calm | < 1 | 0 - 0.2 |
| 1 | Light air | 1 - 3 | 0.3 - 1.5 |
| 2 | Light breeze | 4 - 6 | 1.6 - 3.3 |
| 3 | Gentle breeze | 7 - 10 | 3.4 - 5.4 |
| 4 | Moder. breeze | 11 - 16 | 5.5 - 7.9 |
| 5 | Fresh breeze | 17 - 21 | 8.0 - 10.7 |
| 6 | Strong breeze | 22 - 27 | 10.8 - 13.8 |
| 7 | Near gale | 28 - 33 | 13.9 - 17.1 |
| 8 | Gale | 34 - 40 | 17.2 - 20.7 |
| 9 | Strong gale | 41 - 47 | 20.8 - 24.4 |
| 10 | Storm | 48 - 55 | 24.5 - 28.4 |
| 11 | Violent storm | 56 - 63 | 28.5 - 32.6 |
| 12 | Hurricane | 64 and over | 32.7 and over |

# Appendix 2

## Records where at least one of the parameters is outside the criterions set in the automatic filter.

HANOYTANGEN 1994

RECORDS WITH PARAMETERS OUTSIDE THE CRITERIONS

| OBS | AAR | MND | DAG | TIME | MIN | REF | F30 | G30 | DD30 | F18 | G18 | F10 | G10 | DD10 | T | UU | P |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1994 | 10 | 6 | 19 | 55 | 645 | 19.80 | 29.27 | 176.70 | 11.59 | 14.72 | 11.74 | 14.72 | 187.17 | 10.77 | 83.17 | 1011.47 |
| 2 | 1994 | 10 | 6 | 20 | 5 | 645 | 38.82 | 38.82 | 181.58 | 11.52 | 14.42 | 11.52 | 14.72 | 188.91 | 10.77 | 83.06 | 1011.30 |
| 3 | 1994 | 10 | 6 | 20 | 15 | 645 | 20.09 | 48.37 | 191.36 | 13.16 | 16.22 | 13.16 | 16.51 | 193.80 | 10.87 | 82.56 | 1011.64 |
| 4 | 1994 | 10 | 6 | 20 | 25 | 645 | 0.70 | 29.49 | 194.50 | 12.19 | 14.42 | 12.26 | 15.32 | 194.15 | 10.68 | 83.88 | 1011.30 |
| 5 | 1994 | 10 | 6 | 20 | 35 | 645 | 29.27 | 30.84 | 176.35 | 12.26 | 15.32 | 12.26 | 16.22 | 177.74 | 10.50 | 85.19 | 1010.97 |
| 6 | 1994 | 10 | 6 | 20 | 45 | 645 | 57.84 | 57.69 | 180.54 | 12.19 | 15.92 | 12.34 | 15.92 | 184.03 | 10.59 | 85.90 | 1011.47 |
| 7 | 1994 | 10 | 6 | 20 | 55 | 645 | 10.17 | 48.37 | 194.15 | 12.71 | 17.11 | 12.71 | 16.81 | 195.54 | 10.50 | 86.00 | 1011.81 |
| 8 | 1994 | 10 | 6 | 21 | 5 | 645 | 29.27 | 29.20 | 189.61 | 11.14 | 14.42 | 11.29 | 14.13 | 184.38 | 10.50 | 86.41 | 1011.47 |
| 9 | 1994 | 10 | 6 | 21 | 15 | 645 | 19.72 | 70.90 | 186.47 | 11.07 | 13.23 | 11.07 | 13.53 | 193.45 | 10.50 | 87.12 | 1010.97 |
| 10 | 1994 | 10 | 6 | 21 | 25 | 645 | 38.82 | 69.70 | 189.26 | 11.89 | 13.83 | 11.96 | 14.42 | 191.01 | 10.50 | 87.12 | 1011.30 |
| 11 | 1994 | 10 | 6 | 21 | 35 | 645 | 38.89 | 67.69 | 185.77 | 11.96 | 14.72 | 12.11 | 14.72 | 187.17 | 10.50 | 87.12 | 1011.13 |
| 12 | 1994 | 10 | 6 | 21 | 55 | 645 | 58.29 | 72.24 | 192.75 | 11.44 | 14.13 | 11.52 | 14.13 | 196.59 | 10.50 | 87.22 | 1011.30 |
| 13 | 1994 | 10 | 6 | 22 | 5 | 645 | 19.65 | 57.84 | 194.85 | 10.84 | 12.93 | 10.92 | 13.53 | 198.68 | 10.50 | 87.22 | 1011.64 |
| 14 | 1994 | 10 | 6 | 22 | 15 | 645 | 19.72 | 57.99 | 190.31 | 10.77 | 12.93 | 10.77 | 13.23 | 191.01 | 10.50 | 87.22 | 1011.47 |
| 15 | 1994 | 10 | 6 | 22 | 25 | 645 | 29.27 | 67.47 | 187.17 | 10.55 | 13.53 | 10.62 | 13.83 | 194.85 | 10.50 | 87.22 | 1011.47 |
| 16 | 1994 | 10 | 6 | 22 | 35 | 645 | 29.27 | 29.27 | 186.47 | 11.14 | 14.42 | 11.22 | 14.42 | 189.96 | 10.50 | 87.22 | 1011.47 |
| 17 | 1994 | 10 | 6 | 22 | 45 | 645 | 29.94 | 57.92 | 186.82 | 11.37 | 14.13 | 11.37 | 14.72 | 190.66 | 10.50 | 87.62 | 1011.30 |
| 18 | 1994 | 10 | 6 | 22 | 55 | 645 | 29.27 | 29.27 | 189.96 | 12.11 | 15.02 | 12.19 | 15.32 | 189.26 | 10.50 | 87.62 | 1010.97 |
| 19 | 1994 | 10 | 6 | 23 | 15 | 645 | 67.47 | 57.92 | 187.52 | 11.89 | 14.13 | 11.96 | 15.02 | 195.89 | 10.59 | 87.42 | 1010.97 |
| 20 | 1994 | 10 | 6 | 23 | 25 | 645 | 67.47 | 40.46 | 190.66 | 11.59 | 15.92 | 11.66 | 15.92 | 180.19 | 10.59 | 87.22 | 1010.80 |
| 21 | 1994 | 10 | 6 | 23 | 35 | 645 | 69.03 | 57.92 | 184.72 | 11.96 | 14.72 | 12.04 | 15.32 | 193.45 | 10.59 | 87.52 | 1011.13 |
| 22 | 1994 | 10 | 6 | 23 | 55 | 645 | 10.10 | 57.92 | 189.61 | 11.37 | 14.42 | 11.44 | 14.42 | 192.05 | 10.50 | 87.52 | 1010.97 |
| 23 | 1994 | 10 | 7 | 0 | 5 | 645 | 19.72 | 48.29 | 185.42 | 11.29 | 14.13 | 11.44 | 13.53 | 180.89 | 10.50 | 87.62 | 1010.97 |
| 24 | 1994 | 10 | 7 | 0 | 15 | 645 | 30.84 | 67.47 | 195.89 | 11.59 | 14.13 | 11.66 | 15.02 | 185.77 | 10.50 | 87.93 | 1010.80 |
| 25 | 1994 | 10 | 7 | 0 | 35 | 645 | 67.47 | 29.34 | 189.96 | 11.96 | 14.42 | 12.04 | 14.42 | 191.01 | 10.59 | 87.93 | 1010.80 |
| 26 | 1994 | 10 | 7 | 0 | 45 | 645 | 67.47 | 21.29 | 190.31 | 11.96 | 14.13 | 11.89 | 14.42 | 186.47 | 10.59 | 88.03 | 1010.63 |
| 27 | 1994 | 10 | 7 | 0 | 55 | 645 | 19.65 | 48.29 | 200.08 | 10.84 | 13.83 | 10.92 | 13.83 | 200.78 | 10.59 | 88.03 | 1010.97 |
| 28 | 1994 | 10 | 7 | 1 | 15 | 645 | 48.29 | 48.37 | 189.96 | 10.69 | 12.93 | 10.77 | 12.93 | 195.89 | 10.50 | 88.03 | 1010.46 |
| 29 | 1994 | 10 | 7 | 1 | 25 | 645 | 19.72 | 57.92 | 206.71 | 9.95 | 12.63 | 9.95 | 12.63 | 204.97 | 10.59 | 88.33 | 1010.46 |
| 30 | 1994 | 10 | 7 | 1 | 35 | 645 | 19.72 | 57.92 | 191.70 | 10.77 | 14.42 | 10.77 | 14.72 | 193.80 | 10.59 | 88.33 | 1010.29 |
| 31 | 1994 | 10 | 7 | 1 | 55 | 645 | 0.40 | 2.79 | 194.85 | 9.50 | 12.04 | 9.58 | 12.34 | 198.34 | 10.59 | 88.33 | 1010.46 |
| 32 | 1994 | 10 | 7 | 2 | 5 | 645 | 38.74 | 48.29 | 188.91 | 8.98 | 11.74 | 8.98 | 11.74 | 195.19 | 10.68 | 88.33 | 1009.95 |
| 33 | 1994 | 10 | 7 | 2 | 15 | 645 | 43.59 | 19.72 | 188.91 | 10.55 | 14.42 | 10.62 | 13.23 | 196.59 | 10.77 | 88.43 | 1010.12 |
| 34 | 1994 | 10 | 7 | 2 | 25 | 645 | 10.10 | 57.84 | 196.94 | 10.02 | 12.04 | 10.17 | 12.63 | 191.01 | 10.77 | 88.33 | 1010.29 |
| 35 | 1994 | 10 | 7 | 2 | 35 | 645 | 48.29 | 48.29 | 195.54 | 9.20 | 11.14 | 9.20 | 11.74 | 194.50 | 10.68 | 88.33 | 1010.29 |
| 36 | 1994 | 10 | 7 | 2 | 45 | 645 | 48.29 | 60.15 | 188.56 | 9.13 | 11.44 | 9.13 | 11.14 | 187.17 | 10.77 | 88.03 | 1010.12 |
| 37 | 1994 | 10 | 7 | 3 | 5 | 645 | 38.74 | 10.10 | 214.39 | 8.46 | 11.14 | 8.53 | 11.14 | 207.06 | 10.87 | 87.62 | 1010.29 |
| 38 | 1994 | 10 | 7 | 3 | 15 | 645 | 0.55 | 38.74 | 195.19 | 9.20 | 11.44 | 9.35 | 11.44 | 199.73 | 10.87 | 87.22 | 1010.12 |
| 39 | 1994 | 10 | 7 | 3 | 25 | 645 | 10.10 | 48.29 | 191.36 | 9.58 | 12.34 | 9.72 | 12.04 | 201.83 | 10.96 | 86.61 | 1010.29 |
| 40 | 1994 | 10 | 7 | 3 | 35 | 645 | 20.69 | 67.47 | 198.34 | 9.95 | 12.63 | 10.10 | 12.63 | 191.01 | 11.05 | 86.00 | 1009.95 |
| 41 | 1994 | 10 | 7 | 3 | 45 | 645 | 48.29 | 48.29 | 191.36 | 9.72 | 11.74 | 9.72 | 12.04 | 194.50 | 11.05 | 85.60 | 1009.78 |
| 42 | 1994 | 10 | 7 | 3 | 55 | 645 | 0.55 | 38.67 | 189.96 | 9.35 | 12.04 | 9.35 | 11.74 | 193.80 | 11.05 | 85.50 | 1009.61 |
| 43 | 1994 | 10 | 7 | 4 | 5 | 645 | 48.29 | 48.29 | 198.68 | 9.20 | 12.63 | 9.20 | 11.14 | 200.43 | 11.05 | 85.39 | 1010.12 |
| 44 | 1994 | 10 | 7 | 4 | 15 | 645 | 3.16 | 1.89 | 189.96 | 8.83 | 10.84 | 8.90 | 10.84 | 194.50 | 11.05 | 85.39 | 1009.78 |
| 45 | 1994 | 10 | 22 | 12 | 45 | 645 | 67.32 | 29.12 | 141.80 | 6.59 | 8.46 | 6.44 | 8.16 | 142.15 | 12.63 | 49.64 | 995.92 |
| 46 | 1994 | 10 | 22 | 12 | 55 | 645 | 29.20 | 0.47 | 144.59 | 5.92 | 7.26 | 5.85 | 6.96 | 140.40 | 12.44 | 51.16 | 995.75 |
| 47 | 1994 | 10 | 22 | 13 | 5 | 645 | 29.12 | 29.20 | 134.82 | 6.44 | 7.86 | 6.37 | 7.86 | 142.84 | 12.54 | 49.43 | 995.75 |
| 48 | 1994 | 10 | 22 | 13 | 15 | 645 | 58.81 | 38.82 | 142.50 | 6.14 | 7.56 | 5.99 | 7.26 | 142.84 | 12.44 | 50.75 | 995.75 |

DNMI - KLIMAAVDELINGEN
HANOYTANGEN 1994 14:13 Thursday, November 17, 1994

RECORDS WITH PARAMETERS OUTSIDE THE CRITERIONS

| OBS | AAR | MND | DAG | TIME | MIN | REF | F30 | G30 | DD30 | F18 | G18 | F10 | G10 | DD10 | T | UU | P |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 49 | 1994 | 10 | 22 | 13 | 25 | 645 | 18.30 | 5.62 | 140.75 | 6.07 | 7.56 | 5.92 | 7.26 | 134.12 | 12.54 | 49.94 | 995.58 |
| 50 | 1994 | 10 | 22 | 13 | 35 | 645 | 38.67 | 29.12 | 145.99 | 5.62 | 6.67 | 5.47 | 6.67 | 137.61 | 12.26 | 51.16 | 995.41 |
| 51 | 1994 | 10 | 22 | 13 | 45 | 645 | 57.77 | 48.22 | 146.33 | 5.32 | 6.37 | 5.25 | 6.37 | 140.75 | 12.07 | 52.37 | 995.41 |
| 52 | 1994 | 10 | 22 | 13 | 55 | 645 | 3.38 | 58.51 | 139.35 | 4.88 | 5.77 | 4.73 | 5.47 | 136.21 | 12.26 | 51.56 | 995.24 |
| 53 | 1994 | 10 | 22 | 14 | 5 | 645 | 19.57 | 67.32 | 134.82 | 4.88 | 5.77 | 4.65 | 5.47 | 128.19 | 12.35 | 51.36 | 995.24 |
| 54 | 1994 | 10 | 22 | 14 | 15 | 645 | 29.57 | 67.32 | 139.35 | 5.47 | 6.96 | 5.32 | 6.67 | 135.52 | 12.16 | 51.97 | 995.07 |
| 55 | 1994 | 10 | 22 | 14 | 25 | 645 | 29.20 | 38.67 | 141.45 | 5.99 | 7.56 | 5.77 | 6.96 | 137.96 | 12.35 | 51.16 | 994.90 |
| 56 | 1994 | 10 | 22 | 14 | 35 | 645 | 29.34 | 38.67 | 139.01 | 5.62 | 7.26 | 5.47 | 7.26 | 129.93 | 12.16 | 51.97 | 994.90 |
| 57 | 1994 | 10 | 22 | 14 | 45 | 645 | 67.32 | 67.32 | 139.01 | 5.99 | 7.26 | 5.85 | 7.56 | 135.52 | 12.35 | 50.75 | 994.73 |
| 58 | 1994 | 10 | 22 | 14 | 55 | 645 | 38.67 | 19.57 | 137.26 | 5.92 | 6.96 | 5.77 | 6.67 | 133.07 | 12.16 | 51.56 | 994.73 |
| 59 | 1994 | 10 | 22 | 15 | 5 | 645 | 3.98 | 57.69 | 130.98 | 5.92 | 7.26 | 5.70 | 6.96 | 126.09 | 12.07 | 52.98 | 994.56 |
| 60 | 1994 | 10 | 22 | 15 | 15 | 645 | 1.00 | 29.64 | 129.93 | 6.67 | 7.86 | 6.44 | 7.86 | 126.44 | 12.26 | 51.36 | 994.39 |
| 61 | 1994 | 10 | 22 | 15 | 25 | 645 | 0.55 | 38.74 | 129.58 | 7.04 | 8.76 | 6.74 | 8.46 | 126.09 | 12.26 | 51.16 | 994.39 |
| 62 | 1994 | 10 | 22 | 15 | 45 | 645 | 33.97 | 19.65 | 136.56 | 7.26 | 9.35 | 6.89 | 9.05 | 131.68 | 12.16 | 52.37 | 994.22 |
| 63 | 1994 | 10 | 22 | 15 | 55 | 645 | 1.00 | 39.34 | 138.31 | 7.26 | 8.76 | 7.11 | 8.46 | 137.61 | 12.44 | 51.16 | 994.06 |
| 64 | 1994 | 10 | 22 | 16 | 5 | 645 | 29.27 | 0.47 | 143.54 | 7.11 | 9.35 | 6.96 | 8.76 | 135.52 | 12.26 | 51.56 | 994.06 |
| 65 | 1994 | 10 | 22 | 16 | 15 | 645 | 0.47 | 29.20 | 139.70 | 6.37 | 8.16 | 6.14 | 7.86 | 135.17 | 11.98 | 53.38 | 993.89 |
| 66 | 1994 | 10 | 22 | 16 | 25 | 645 | 0.47 | 0.55 | 139.35 | 6.44 | 7.86 | 6.37 | 7.56 | 132.72 | 12.16 | 52.37 | 993.89 |
| 67 | 1994 | 10 | 22 | 16 | 35 | 645 | 40.98 | 40.83 | 134.82 | 6.89 | 9.35 | 6.74 | 9.35 | 132.72 | 12.26 | 51.56 | 993.72 |
| 68 | 1994 | 10 | 22 | 16 | 45 | 645 | 29.49 | 38.67 | 134.82 | 5.77 | 6.67 | 5.62 | 6.67 | 132.72 | 12.07 | 52.37 | 993.55 |
| 69 | 1994 | 10 | 22 | 16 | 55 | 645 | 29.12 | 67.39 | 135.17 | 6.07 | 7.86 | 5.92 | 7.86 | 134.47 | 12.16 | 52.37 | 993.55 |
| 70 | 1994 | 10 | 22 | 17 | 5 | 645 | 0.85 | 38.67 | 129.23 | 6.82 | 9.05 | 6.59 | 8.76 | 127.14 | 12.35 | 51.16 | 993.38 |
| 71 | 1994 | 10 | 22 | 17 | 15 | 645 | 29.49 | 29.12 | 133.42 | 6.67 | 8.76 | 6.44 | 8.76 | 125.39 | 12.16 | 53.18 | 993.21 |
| 72 | 1994 | 10 | 22 | 17 | 25 | 645 | 4.88 | 58.59 | 125.74 | 6.37 | 8.46 | 6.22 | 8.76 | 126.79 | 12.26 | 51.97 | 993.04 |
| 73 | 1994 | 10 | 22 | 17 | 35 | 645 | 29.12 | 57.77 | 125.05 | 5.92 | 8.46 | 5.55 | 8.16 | 125.05 | 12.26 | 52.37 | 993.04 |
| 74 | 1994 | 10 | 22 | 17 | 45 | 645 | 47.17 | 1.30 | 123.30 | 5.32 | 7.26 | 4.88 | 7.56 | 117.02 | 12.16 | 52.78 | 993.04 |
| 75 | 1994 | 10 | 26 | 12 | 39 | 645 | 19.50 | 0.40 | 87.70 | 0.40 | 0.40 | 0.40 | 0.40 | 72.35 | 11.79 | 55.00 | 994.22 |